MEDICAL LIBRARY

OCT 18 1948

BRITISH MEDICAL JOURNAL

JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

SATURDAY OCTOBER 2 1948

TABLE OF CONTENTS

Present State of our Knowledge of the Anatomy of the Primates
F. WOOD JONES, F.R.C.S., F.R.S. 629

Carcinoma of the Breast and its Treatment
SIR CECIL WAKELEY, K.B.E., C.B., D.SC. F.R.C.S. 631

Early Diagnosis and Treatment of Carcinoma of the Breast
VICTOR RIDDELL, M.D., F.R.C.S. 635

Papilloedema in Emphysema THOMAS SIMPSON, M.SC., M.D., M.R.C.P. 639

Out-patient Electric Convulsion Treatment SIR W. P. MALLINSON, BT., B.M., M.R.C.P. 641

Case of Gross Overdosage of Soluble Phenytoin T. N. NAUTH-MISIR, M.B., D.C.H. 646

MEDICAL MEMORANDA

Late Recurrence after Marsupialization of Echinococcus Cyst of Liver. P. G. KONSTAM, F.R.C.S.Ed. 647

Formation of Obstructing Band in 21 Days. ALEXANDER DUFF, M.D., F.R.C.S.Ed. 647

GENERAL ARTICLES AND NEWS

British Association: 110th Meeting at Brighton 654

SPEECH THERAPY: CONFERENCE IN LONDON 656

MEDICAL NOTES IN PARLIAMENT 663

MEDICAL NEWS 664

QUESTIONS AND COMMENTS

Treatment of Chronic Nephritis—The Kempner Rice Diet—Bronchial Carcinoma and Smoking—Calcium Iodide for Cataract—T.A.B. Inoculation of Infants—Thrombophlebitis and Muscular Effort—Light Sensitization Dermatitis—Offspring of a Syphilitic Mother—Radioactive Iodine in Thyrotoxicosis—Head Colds in a Child—"Dynamite Headache"—Colour Photographs—Delivery after Operation for Prolapse—Dangers of Cinchophen—Correction 667–8

Epidemiology Section 666

LEADING ARTICLES

A Guide to the Rh Factor 650

Injuries Caused by Cold 651

ANNOTATIONS

Reports on Vagotomy 652

Prolonging Penicillin Action 653

Toxicity of Stilbamidine 653

REVIEWS

Hallmarks of Mankind 648

Psychiatric Research 648

Early Diagnosis 648

Teaching Health 649

Books Received 649

MEDICO-LEGAL

Silicosis not an Accident 664

OBITUARY

Francis Keene Marriott, M.C., M.R.C.S. 663

CORRESPONDENCE

Diabetic Coma. E. P. JOSLIN, M.D. ... 657

Clinical Research. D. H. PATEY, M.S. 658

Stainless Steel Wire. ALEXANDER BLAIN III, M.D. 658

SUPPLEMENT

Fixed Annual Payment of £300 ..... *131*

N.H.S. (SUPERANNUATION) REGULATIONS: DISTRICT MEDICAL OFFICERS *131*

CORRESPONDENCE *131*

ASSOCIATION NOTICES *132*

CORRESPONDENCE—*cont.*

Prevention of Dental Caries. M. A. RUSHTON, M.D. 658

Cervical Sympathetic Paralysis. MICHAEL KELLY, M.B. 659

Acute Porphyria. GEORGE DISCOMBE, M.D. 659

Maxillary and Mandibular Neuralgia. J. H. YOUNG, M.D. 660

Use and Abuse of Tonsillectomy. G. C. F. ROE, M.R.C.P.I.; M. ASTON KEY, M.D.; D. F. A. NEILSON, F.R.C.S., and G. H. BATEMAN, F.R.C.S. 660

Vaccination. W. A. HYSLOP, M.B.; IAN STEWART, M.B. 660

Resuscitation by Rocking. V. L. KAHAN, L.M.S.S.A.; S. E. GOULSTINE, M.R.C.S. 661

Genu Valgum. H. A. LAVELLE, M.B. 661

Purpura Complicating Scarlet Fever. DOUGLAS GAIRDNER, D.M. 661

Reactions to Intravenous Sclerotics. R. E. SIDEBOTHAM, M.R.C.S. 661

Transfusion and Haemolytic Disease. H. S. RUSSELL, M.D. 661

Poisoning by Berries. P. R. DAVIS, M.B. 661

Rhabdomyosarcoma of the Urinary Bladder. A. G. MARSHALL, M.B. ... 662

Empirical Methods. A. R. MCCLURE, M.B. 662

Comprehensive Child Health Service. S. T. BEGGS, M.D. 662

Points from Letters 662

BRITISH MEDICAL ASSOCIATION, TAVISTOCK SQUARE, LONDON, W.C.1

No. 4578, WEEKLY, PRICE 1/6

Copyright

REGISTERED AS A NEWSPAPER

UNIVERSITY OF MICHIGAN LIBRARIES

Clarks

NEW CORRECTIVE HEEL

for Children

Clarks have pleasure in announcing that they are making a new heel, suitable for attachment to an ordinary pair of Clarks Children's Shoes, which can successfully replace the use of T-irons or heavy surgical boots in the treatment of certain foot ailments and leg weaknesses.

CLARKS CURATOR HEEL

has been clinically tested by an orthopædic surgeon, who has employed it in a number of cases with most encouraging results. The heel, moulded in light-weight rubber, is shaped to give arch support to weak feet (valgus feet).

It is intended, as far as possible, to ensure that there shall not be indiscriminate use of this corrective device. Clarks prefer that it should be used only when specified by medical practitioners and that its fitting, etc. should be under expert supervision. Full details are available to members of the medical profession, children's clinics, etc. on application to Clarks.

C. & J. Clark, Ltd., Street, Somerset.

SPECIALLY FOR INVALIDS

Invalid Bovril is a particularly highly concentrated form of Bovril, prepared without seasoning, for use in the sick-room. Providing as it does the maximum concentration in the most easily assimilated form, Invalid Bovril is useful in promoting recovery and assisting convalescence. Costs a little more than ordinary Bovril, but goes further.

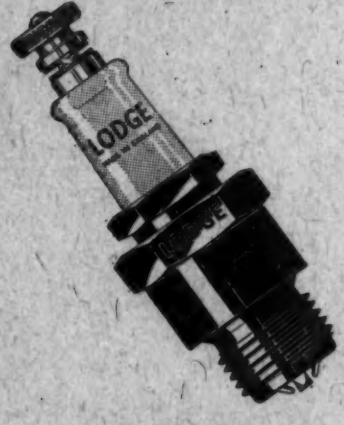
INVALID **BOVRIL**

The Essence of Convalescence

Sold by all Chemists.

LODGE

PLUGS



BEST

in the Long Run—

and the Short Run!

Lodge Plugs Ltd., Rugby, England

ZŌPLA

STRAPPING

Zōpla Strapping is a first class product for surgical use. Very strong cloths, the mass is powerfully adhesive. White and Flesh Cloths, also on Elastic Cloth.

WHITE FELT

Zōpla on White Felt is very popular for padding and protective purposes. Does not harden in use.

ZŌPLA—BAND

Zōpla-Band, Elastic Adhesive Bandage, ideal where elasticity is essential.

MANUFACTURED BY

LESLIES LTD

EST. 1823

HIGHAM HILL RD
WALTHAMSTOW
LONDON, E17

BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 2 1948

PRESENT STATE OF OUR KNOWLEDGE OF THE ANATOMY OF THE PRIMATES*

BY

F. WOOD JONES, F.R.S., F.R.C.S., F.R.A.C.S.

Sir William Collins Professor of Human and Comparative Anatomy, Royal College of Surgeons of England

In making any attempt to review the present position of primate anatomy it is essential that some consideration be paid to the historical background of the subject, for in no other way is it possible to appreciate the factors that have created this position or to indicate how unsatisfactory the present position actually is. A digression may be permitted in order to pave the way for what must be said concerning the phases of investigation into the comparative anatomy of the primates. Were we, following the modern fashion of testing public opinion by means of a questionary, to ask a generally informed set of people, "What British scientific man was the great authority on the method of formation of coral islands and reefs?" the answer would probably be, "Charles Darwin." For was not Charles Darwin the propounder of the much acclaimed theory of subsidence that apparently explained so well the development and structure of coral reefs and atolls? It is quite certain that of all those who gave this answer with considerable confidence very few indeed would be acquainted with the fact that when Darwin elaborated his erroneous theory of coral-island evolution he had never seen a coral structure of any kind, even from the deck of a passing ship. Nevertheless, the publication of *Coral Reefs* in 1842 produced the very general impression that there was little or nothing that remained to be investigated regarding coral formations, since Darwin, with his painstaking researches during the voyage of the *Beagle*, had exhausted the possibilities of the subject.

Even if there might not be complete unanimity regarding the answer to the coral-island question in our imagined questionary, there would be general agreement regarding the second question, "Which British zoologist was the great authority on the relationship existing between men and monkeys?" The answer would inevitably be, "Charles Darwin." For was it not Charles Darwin who made it clear to the whole world that an intimate comparison of the anatomical features of man and apes guaranteed the confident assertion that man had been "evolved from an ape-like progenitor"? But most of those who gave this answer would do so entirely unaware that Darwin had no first-hand knowledge whatever of the anatomy of monkeys, apes, or men, that he was unacquainted with or ignored much readily accessible current literature on the subject, and that such information as he possessed at second hand consisted largely of ill-assorted and ill-assimilated odds and ends culled, often enough, from the writings of the anecdotal period of natural history. This is the conclusion regarding Darwin's competence to adjudicate on the relationship existing between man and apes to which any impartial reader of his works must come.

*Read in opening a discussion in the Section of Anatomy and Anthropology at the Annual Meeting of the British Medical Association, Cambridge, 1948.

The Malar Bone

Any comparative anatomist who reads the *Descent of Man* with an open mind can only dismiss the whole thesis as one lacking any factual basis in primate anatomy. It is remarkable that those who make confident appeal to the works of Darwin must in many cases be so unfamiliar with the actual text that such strange things as his assertions regarding the malar (jugal) bones of monkeys and man have never intruded themselves upon their notice. Of this bone Darwin writes: "... the malar bone, which in some of the quadrumana, and other mammals, consists of two portions. This is the condition in the two-months-old human foetus: and thus it sometimes remains, through arrested development, in man when adult, more especially in the lower prognathous races" (*Descent of Man*, 1st ed., vol. 1, p. 124). For this piece of anatomical information Darwin gives a reference to the work of Canestrini; but it is obvious to any anatomist that the account, erroneous as in any case it is, actually relates not to the malar bone at all but to the old question of the condition of the premaxilla and maxilla typical of monkeys on the one hand and of man on the other.

It is obvious that so little was Darwin acquainted with the cranial characters of the primates that he translated the whole story into the morphology of the malar bone and thereby created an anatomical absurdity with which those who so freely quote his authority appear to be wholly unacquainted. It can hardly be claimed that Darwin wrote "malar" for "premaxilla" by a mere slip of the pen, for the statement is repeated in a footnote added to the same page and again upon the page following.

On the whole the malar bone suffered considerable injustice at the hands of the Darwinians, for Thomas Henry Huxley also took unwarranted liberties with it. Huxley, who had postulated that "with the increase of our knowledge of fossil forms" the distinctions between the Perissodactyla and Artiodactyla would disappear (*Anatomy of the Vertebrated Animals*, 1871, p. 292), described the post-orbital bar of the horse in the following terms: "The orbit is bounded behind by the united post-orbital processes of the frontal and the jugal" (*op. cit.*, p. 297). This description of the horse's jugal is completely at variance

with the facts, for the jugal does not articulate with the frontal but with the temporal. But since it is an accurate account of the bone as it is present in the cow it renders a belief that in evolution the perissodactyl and artiodactyl phyla "pass one into the other" (*The Classification of Animals*, 1869, p. 102) more readily acceptable.

Our knowledge of the morphology of the malar bone in the primates and the ungulates cannot be said to have been in any way clarified by the immediate propagandists of Darwinian evolution.

Supracondyloid Foramen

Again, it usually escapes the notice of those who appeal to Darwin's own statements that he asserts that the supracondyloid foramen is present "in the quadrumana and some other orders of mammals," and that in man "there is generally a trace of this passage, and it is sometimes fairly well developed (*op. cit.*, p. 28). This account would naturally lead the reader to suppose that in man there was generally a small foramen and sometimes a large one, and that this condition was derived from the fully developed form present in the apes. The human anatomist must realize how unwarranted such a statement is when made about the occasional presence of a supracondyloid spur in man. The comparative anatomist can only feel that by this statement Darwin smoothed away one of the anatomical facts most fatal to any belief in an evolutionary progress along the assumed line of the groups constituting the Order Primates.

As a matter of fact, no monkey or ape of the catarrhine series (with which man shows most anatomical affinity) has ever been known to develop a supracondyloid or entepitrochlear foramen: and the position is complicated by the fact that, although absent in the Catarrhini, the presence of the foramen is typical of the Platyrrhini. Of the two humeral foramina, termed by him the supracondyloid and intercondyloid, Darwin had but little real conception and no first-hand knowledge, and since in a footnote he made direct reference to the work of St. George Mivart he naturally drew upon himself the very just criticism of this authority on comparative anatomy. But this and the many other criticisms made by Mivart fell for the most part on deaf ears.

If then it must be admitted that Darwin made no contribution to our knowledge of primate anatomy and that he had in fact assimilated very little of the knowledge that was current at the time, it might be supposed that those zoologists who so strongly supported his claims had supplied the anatomical details so conspicuously lacking in his own work.

Huxley's Contribution

In 1863, four years after the appearance of the *Origin of Species*, Thomas Henry Huxley published *Man's Place in Nature*, a book that received great acclaim from Haeckel and others and which paved the way for the *Descent of Man* eight years later. Some review of Huxley's contribution to the knowledge of primate anatomy is therefore essential. *Man's Place in Nature* is divided into three parts, between which there is but little continuity.

Part I is entitled "The Natural History of the Man-like Apes." It occupies 56 pages, quotes over 30 authorities, mostly of the anecdotal type, on the history, habits, and appearance of the anthropoid apes. It is a mere compilation and contains no original observations.

Part II deals with "The Relations of Man to the Lower Animals." It occupies 55 pages, and may be said to prove what Darwin also proved—that man is an animal. But it cannot be claimed that in the 1860s this thesis stood in any need of proof. It is astonishing that Huxley should stress the fact that both man and the dog were developed from an ovum as though it was a crucial point in testing the truth of Darwin's hypothesis. The second section of the book introduced and reiterated what Haeckel termed "Huxley's Pithecometra thesis." This dictum maintains that, no matter what structural feature is examined, the difference between man and the gorilla is less than that between the gorilla and the "lower primates." The Pithecometra thesis was destined to become a perfect anodyne for all those who lacked sufficient knowledge of primate anatomy to detect its fallacies.

Judged by the state of embryological knowledge at the time, Huxley's account of human development can only be described as out of date. His statement that "it is very long before the body of the young human being can be readily discriminated from that of the young puppy" can only be matched with Haeckel's claim for the late appearance of distinctive human characters in the human embryo. Haeckel's pronouncement occurs in his *Anthropogenie oder Entwickelungsgeschichte des Menschen* and is as follows: "At length in the fourth and fifth month these [distinguishing human] characters make their appearance, and during the four last months of the embryonic life of the human being, from the sixth to the ninth month of pregnancy, the human embryo is readily distinguished."

Such references as there are in this part of the book to the actual structure of man and apes deal mostly with the skeleton and are mainly metric and not descriptive.

Following Part II of the book are 6 pages, irrelevant in their content, dealing with Huxley's argument with Richard Owen concerning the hippocampus minor.

Part III is entitled "On Some Fossil Remains of Man." It occupies only 40 pages and deals mainly with the Engis and Neanderthal crania. After an examination of these crania the book ends in what appears, following the previous note of high assurance, as somewhat of an anticlimax: "In conclusion, I may say, that the fossil remains of Man hitherto discovered, do not seem to me to take us appreciably nearer to that lower pithecoid form, by the modification of which he has, probably, become what he is."

It cannot be claimed that *Man's Place in Nature* made any real contribution to the subject of primate anatomy, and Huxley is not to be ranked as a primate anatomist. Nor, as is commonly assumed, can he be regarded as the authority who supplied the facts of anatomy necessary for the full acceptance of the Darwinian hypothesis. Out of a total of some 170 papers published in his lifetime Huxley wrote only two dealing with primate structure. The only contribution he made before writing *Man's Place in Nature* concerned the brain of Ateles.

Anatomists Contemporary with Darwin

It is naturally absurd to pass judgment upon any work unless that work has been regarded in proper perspective in relation to the background of knowledge existing at the time of its appearance. If we are to provide the background against which the anatomical knowledge of the primates that went to the making of the *Descent of Man* and *Man's Place in Nature* is to be judged we must not forget the work of Robert Bentley Todd. From 1835 to 1859 Todd issued the five volumes of his great *Cyclopaedia of Anatomy and Physiology*, and Huxley himself was a contributor to this work. Here there were available Vrolik's contribution on the anatomy of the quadrumana and Allen Thomson's account of the ovum. Vrolik gave a perfectly accurate account of the maxilla and premaxilla in the primates, and he drew attention to the fact that the entepitrochlear foramen of the humerus was present only in the platyrrhine monkeys. It seems an extraordinary thing that Darwin apparently ignored this important work so readily available to all students of human and comparative anatomy.

The fact that Darwin was only very imperfectly acquainted with primate anatomy, even at second hand, and

that Huxley's contributions added but little to fill in the gaps in Darwin's knowledge, is all the more remarkable when it is remembered that in 1863 Richard Owen was 59 years old, that St. George Jackson Mivart was 36, and that the one was a master of the comparative anatomy of the vertebrates and the other a leading authority on the anatomy of the mammals and especially of the primates. But Owen had the misfortune to challenge Huxley's knowledge of primate anatomy on a point upon which his own knowledge was deficient. Owen, though the supreme authority on comparative anatomy, was defeated in a particularly stupid argument, and thereafter his weight as a critic of the ape origin of man thesis declined.

Mivart's book *Man and Apes* fell dead in 1873, two years after the publication of the *Descent of Man*. It fell dead not because the facts of primate anatomy so cogently brought forward by Mivart were proved incorrect but because they were ignored. They were ignored because a belief had been created that Darwin and Huxley had said the last word on the structural affinities between man and the rest of the primates. Unfortunately this belief persisted after the euphoria of nineteenth century scientific thought had, for many sciences, passed away. With some it seems to persist even to-day, and as a consequence the whole subject of comparative primate anatomy has failed to receive that re-examination that is so long overdue and that has already been carried out in so many other branches of science. Not until the complete anatomy of a wide series of members of the primates is recorded shall we be in a position to determine the interrelations of the different groups and to place the subject of man's place among the primates on a perfectly sound basis.

It is safe to prophesy that, as knowledge of the anatomy of the primates increases, the complexities of the problem will increase, and much work will have to be accomplished before ultimate clarity is achieved. It is satisfactory that the period of dogmatism is passing, but it will not be until anatomists regain their lost faith in the importance of morphological studies that the new era in our knowledge of primate anatomy dawns.

CARCINOMA OF THE BREAST AND ITS TREATMENT*

BY

Sir CECIL WAKELEY, K.B.E., C.B., D.Sc., F.R.C.S. F.R.S.Ed., F.A.C.S., F.R.A.C.S.

Senior Surgeon, King's College Hospital; Surgeon to the Royal Masonic Hospital; Consulting Surgeon to the Royal Navy

It may be thought that carcinoma of the breast is a common and hackneyed subject and one of little interest to the medical practitioner, yet it must be acknowledged that breast cancer is one of the main killing diseases in women. There can be no doubt that the incidence of this disease is steadily rising, and it behoves the medical profession to instruct and advise the public about the importance of its early diagnosis and treatment. Every year some 7,500 women die of cancer of the breast, this situation being the commonest site for cancer in women, accounting for 20% of female cancer deaths.

All clinicians will agree that the breast is a very favourable site for malignant disease, and that in early cases operative treatment gives excellent results. Even in cases in which no treatment whatever is given the patient may be expected to live for three years; this is a fact that the medical profession does not realize.

The two common factors for causing patients to seek medical advice are pain and the presence of a lump. Only the second of these is present in early cases; this in itself is the main factor in the poor results which are obtained in the treatment of this condition.

Spread of Mammary Cancer

Cancer of the breast begins in the acini or ducts and at first is a very limited condition; soon, however, there is spread of cancer cells up and down the ducts and then through the duct wall. From here the extension is via the lymphatics of the breast, and, lastly, via the blood stream. There can be little doubt that the condition of the stroma of the breast together with its lymphatic and blood connexions plays an important part in the spread of the disease. In girls and young women the vascularity of the breast is very pronounced, and if cancer develops the prognosis is hopeless. It is also very bad in cases of cancer developing during pregnancy and lactation; while in women over 80 the condition of the breast and its stroma is so fibrotic that the disease may last many years without any real extension. I have watched a woman aged 88 with a carcinoma of the breast for 15 years; she has refused every kind of treatment that has been advocated.

To understand the lymphatic spread of mammary cancer it is important that a true conception of the connexions of the lymphatic vessels should be forthcoming.

The Lymphatics of the Breast

Our knowledge of the lymphatic drainage of the breast has increased during the last 40 years. As a student I often watched the late Sir Watson Cheyne perform a radical excision of the breast, divide the clavicle, and remove the supraclavicular glands. These patients rarely survived six months but died of general metastases and recurrence in the supraclavicular regions. It was thought and taught at that time (1909) that the lymphatics of the breast passed under and over the clavicle to the supraclavicular glands. It was also taught that the lymphatics of the axilla passed upwards into the supraclavicular glands. These ideas of lymphatic spread have been greatly modified during the last 20 years as the pathology of mammary cancer has been placed on a more sound foundation.

I believe, but not every surgeon will agree with me, that there is no lymphatic connexion between the breast and the supraclavicular glands except via the upper intercostal spaces and the internal mammary glands. In my opinion there is no connexion between the axilla and the supraclavicular glands. On this belief hangs the modern conception of radical mastectomy. The conservation of the clavicular head of the pectoralis major muscle implies that no lymphatic vessels pass from the breast to the supraclavicular glands in front of or behind the clavicle.

Involvement of the supraclavicular glands therefore means that intrathoracic extension of the disease has taken place and the condition is therefore inoperable.

Although the lymphatics of the breast are numerous, there are very definite pathways which determine the spread of the disease. The lymphatics from the upper and outer quadrant drain into the axillary glands. Those from the lower and outer quadrant drain for the most part into the axilla, but a few may drain to the lymphatics of the abdominal wall to the umbilicus and so via the ligamentum teres to the liver. The lymphatics of the inner quadrants of the breast drain via the intercostal spaces into the

*Read in opening a discussion in the Section of Surgery at the Annual Meeting of the British Medical Association, Cambridge, 1948.

internal mammary glands and the anterior mediastinum and so into the supraclavicular glands (Fig. 1).

Some lymphatics may pass across the middle line to the opposite breast, while a few may pass to the para-mammary glands and to the abdominal lymphatics.

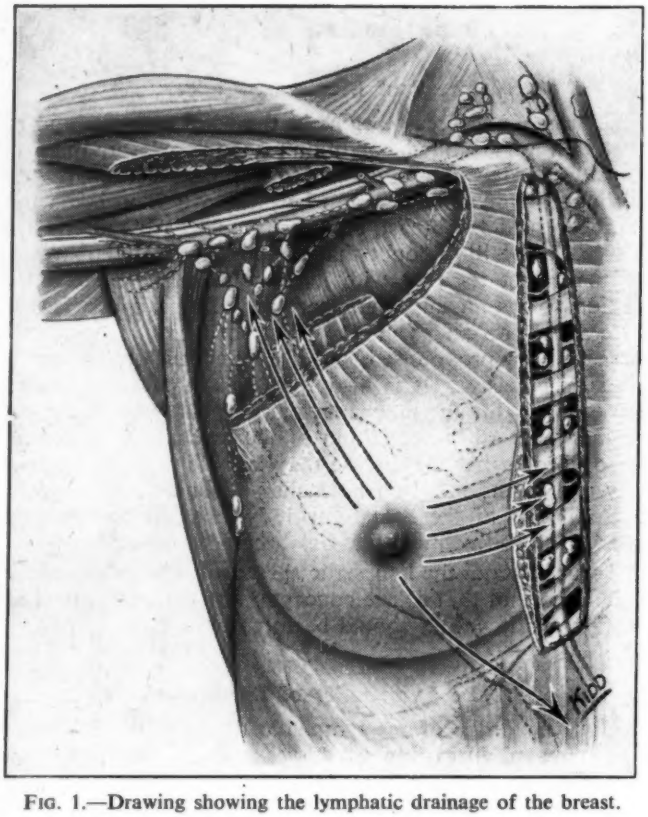


Fig. 1.—Drawing showing the lymphatic drainage of the breast.

Early Diagnosis

It is essential that early diagnosis should be made if better results are to be obtained in the treatment of carcinoma of the breast. There are several factors which have in the past prevented early diagnosis and these should be entirely eliminated to-day. The patient who discovers a lump in her breast often decides to tell no one, as it might be cancer and she might die as some of her friends or relatives have done. This fear of cancer is very real and must be tackled by the profession on proper lines. The laity must be convinced that cancer of the breast can be cured in the early stages of the disease. I have found that the average time taken by my patients before they report the presence of a lump in the breast is six months, while in some cases it is double that time. Another factor is the treatment of carcinoma of the breast by quacks and herbalists and the like. This is a free country and patients may seek advice from anyone, but it is a pity that some sort of propaganda should not be used to reveal the real danger to which the public at large are subjected.

Early diagnosis by the practitioner has in the past been hampered by the fact that nearly every textbook on surgery reveals the late stages of the disease as diagnostic factors of importance. It must be acknowledged that there is only one early sign of carcinoma of the breast and that is the presence of a lump. This lump is in the substance of the breast, is usually hard, and can often be felt by the flat of the hand. Cancer is the commonest cause of a lump in the breast, and this must not be forgotten. The lump is closely united to, if not absolutely incorporated with, the breast substance, and on careful digital examination its margin is quite indefinite. In the early stages it is entirely distinct from the skin, which moves freely over its surface, but as growth proceeds the stroma contracts and, by dragging on the suspensory ligaments of Cooper passing from the glandular substance to the skin, the latter structure becomes more or less fixed, and hence, on attempting to move it upon the tumour, an appearance of dimpling results.

In investigating any case of a lump in the breast the practitioner must never arrive at a hasty conclusion, but give an opinion of its nature only after careful and detailed examination. Thus, the age and previous history of the patient and the family history should be considered. Simple tumours generally arise at an earlier date than the malignant, while sarcomata usually affect younger individuals than carcinomata. There can be little doubt, moreover, about the occasional tendency of tumours to run in families. The length of time for which the swelling has been observed, and whether or not it varies in size at the menstrual periods, should be ascertained. The general appearance of the patient should be noted, and also the fact whether local or neuralgic pain is experienced. It is not unusual for pain to be referred to that part of the shoulder supplied by the posterior division of the second intercostal nerve, the anterior branch of which goes to the breast.

A careful inspection of the organ should be made with the patient sitting and lying down, comparing it with the opposite breast so that any signs of asymmetry may be noted. Dimpling of the skin, projection of the tumour or of the whole gland, and the situation and condition of the nipple are the chief points to which the practitioner's attention should be directed. Examination with the flat of the hand, accompanied by gentle pressure of the finger-tips, must then be undertaken; it is not enough to pick up the breast substance between the fingers, as thereby false impressions are obtained.

The relation of the tumour to the gland, its shape, its consistency, whether fluctuating or not, its mobility on superficial, deep, and surrounding parts should be investigated. To this end the breast must also be examined with the patient's hand pressed to the hip, so as to put the fibres of the pectoralis major muscle into action; transverse movement of the organ across the fibres is always possible unless the growth is fixed to the thoracic wall; movement in the direction of the fibres is at once limited if the tumour has invaded the muscle or even if the overlying fascia is seriously involved. Finally, the lymphatic glands in the axilla, the supraclavicular glands, and the opposite breast and axilla must be carefully examined. After such a detailed examination, if the practitioner is still in doubt about the nature of a tumour of the breast, then local excision of the *whole* lump and not part of it should be undertaken and a histological examination of the tissue removed should be made. If the condition is benign, then the patient will be completely satisfied and relieved; if on the other hand the condition is malignant, adequate treatment can be forthcoming.

It is important to classify the clinical manifestations of carcinoma of the breast before any decision is made about the form of treatment. The clinical classification can be divided into the following stages:

Stage I.—Tumour of the breast only.

Stage II.—Tumour of the breast and skin changes and/or axillary glands.

Stage III.—Tumour of the breast and supraclavicular glands or glands in opposite axilla, and/or fixation of the breast to the pectoral fascia.

Stage IV.—Skeletal and visceral metastases.

Treatment

The surgeon to-day has the choice of radical surgery alone or combined with radiotherapy, local excision and radiotherapy, or radiotherapy alone. After thirty years' experience during which I have operated upon over 500 women and nine men for this condition my ideas have become definitely crystallized.

Stage I.—I am convinced that in these cases radical mastectomy is the method of choice and offers the best chance of eradicating the disease completely. However, in those cases in which the woman is slight, the breast is small, and the tumour is in the inner quadrants I perform a local excision of the breast and follow this with radiotherapy. Cancer of the breast occurring in the inner quadrants is apt to extend into the intercostal spaces without any clinical evidence whatever, and this is why the prognosis is bad in these cases. A radical amputation in a small woman with a small breast would involve extensive skin grafting of the chest wall to close the defect left behind after the amputation, and this in itself would delay any post-operative radiotherapy. It has been said that radical amputation is a mutilating operation, but so is local excision, and from the patient's point of view the psychological effect is better, for they realize that everything has been removed and are much happier.

The operative mortality from radical mastectomy is not more than 1%, and this is due to the rare case of embolism or the very occasional anaesthetic death. With careful pre-operative preparation and the use of blood transfusion in selected cases the mortality could easily be lowered. I am not in favour of post-operative *x*-ray therapy in Stage I cases. I employed it for some 10 years and found from my follow-up that the results did not justify its use. There can be no doubt that *x*-ray treatment does produce some anaemia, and some fibrosis of the lungs always follows its application. In my "follow-up" I have obtained an 81% five-year cure and a 65% ten-year cure. Of course it is quite fallacious to talk about cures in carcinoma of the breast, as I have had 12 cases in which recurrence took place 10 years after operation, the longest being that of a woman who died of recurrence 22 years after radical mastectomy.

Stage II.—These cases give poor results with surgery alone, and in my series I can record only a 25% five-year survival rate. This is distressing, as Stage II cases so often form the greater proportion of cases seen in our hospitals at the present time. It behoves us to take stock of our results and to consider in what way they can be improved. Stage II cases mean lymphatic extension beyond the confines of the breast, and, this being so, pre-operative *x*-ray treatment should be given to eliminate the lymphatic vessels which are loaded with cancer cells. Pre-operative irradiation means a delay in removal of the breast for some two months, but the surgeon can arrange his cases so that irradiation is given immediately after the patient is seen for the first time and the date of admission can be fixed. In quite a number of cases the primary tumour becomes smaller, also the axillary glands, and the risks of dissemination are considerably reduced. Why, then, it may be asked, should not *x*-ray therapy be given and no operative measures be undertaken? The answer to this question is that the results are not as good as when pre-operative *x*-ray therapy is followed by radical mastectomy. Post-operative irradiation should be reserved for those cases in which there is recurrence.

Stage III.—Surgery can be of little avail in these cases, as the condition is essentially inoperable. *X*-ray therapy is the treatment of choice. The surgeon may be asked to remove a fungating tumour so as to make the life of the patient more tolerable or as an ancillary to the *x*-ray therapy. It is curious to note that some of the worst cases survive the five-year period when the prognosis from the start of treatment seemed hopeless.

Stage IV.—These cases are the bane of the practitioner's life, for there is little that can be done for them. Irradiation is only palliative, but may be useful in controlling some bone metastases and giving some relief from pain. It may well be that the extended use of endocrines in Stage IV cases will prove of real value. I have been impressed with the value of testosterone in large doses (1,000 mg.) in these cases, and I consider that it gives results comparable to those obtained by stilboestrol in cases of carcinoma of the prostate. The use of testosterone should have a much more extended trial in these advanced cases. I know of no more difficult and trying surgical case than that of advanced mammary cancer. It is useless for the practitioner or surgeon to say that nothing else can be done, for the relatives will immediately fly off to some quack, who will promise a cure with some highly coloured injection of excessive cost which must be given at a certain time each day. Such treatments go on for at least a year. When the patient dies the relatives are told that if only the patient had come for treatment a little sooner a cure would have resulted. We are all familiar with such cases and they do not do the profession any good. I therefore advise the extended use of testosterone for these patients. Human nature demands some treatment in the advanced mammary cancer case, and therefore let us as medical men and women see to it that the treatment given has a scientific basis.

Radiotherapy

The question of radium or *x*-ray treatment in mammary cancer is one that has interested surgeons for several years, and I am quite definite in my sole advocacy for *x*-ray therapy with or without surgery rather than radium therapy. My reasons are that, although radium has been used in Stage II cases with some success, the primary tumour still persists in the breast, although it may simply be composed of a mass of hard fibrous tissue. This in itself has a bad psychological effect on the patient, because she imagines that the growth still persists and that it may eventually spread. I have often been asked to excise such a mass several years after radium treatment, and I realize the peace of mind removal of the mass brings to the patient. Radium is more local in its action than *x* rays, and the outlying lymphatic vessels are more likely to come within the barrage of the *x*-ray tube than the radium needles.

It is essential to keep an eye on the patient's blood picture during the time she is undergoing *x*-ray therapy, and should this show a reduction in the red cells steps must be taken to bring the blood picture back to normal. As a rule a good iron tonic with a liberal amount of vitamins will effect this.

Radical Mastectomy

Although it is some 50 years since Halsted advocated his radical operation for carcinoma of the breast, this treatment is still performed to-day. Yet there are certain details that I consider worth while bringing to your notice. It is important to conserve the clavicular head of the pectoralis major muscle, as this protects the axillary vessels and prevents the skin from becoming adherent to them. I have twice seen this distressing condition in cases in which the whole of the muscle was excised. Also, in my opinion, oedema of the arm is more likely to follow, as the lymphatics are compressed by the skin crossing the axillary vessels and nerves. I have never seen or heard of a patient who developed a secondary deposit in the clavicular portion of the pectoralis major, nor do I believe that there is any lymphatic connexion between the breast and the supraclavicular glands except via the mediastinum.

In dissection of the axilla it is most important to remove all fat and glands below and to the inner side of the axillary vein. On no account should any attempt be made to remove fat from the axillary artery or brachial nerve cords, because after such a course is adopted brachial neuralgia is very likely to ensue. In my student days it was a common procedure for the surgeon to display the axillary vessels and brachial plexus and remove every particle of fat from the axilla, and a large number of these cases developed brachial neuralgia which caused much pain and misery.

The radical operation itself should be definitely planned and the patient should be in hospital several days before operation. To-day there is too great a tendency for the patient to arrive in hospital late one day and to be operated upon the next. This cannot be condemned too strongly; it leaves no time for any pre-operative examination, blood count, or *x*-ray picture of the chest to see if any secondary deposits have developed.

The technique that I use is as follows.

Operative Technique

Previous to operation the axilla should be shaved and the skin purified over an extensive area including the back. The patient then lies on the back with the head directed towards the opposite side and the arm raised and held to a little more than a right angle. The field of the operation is protected from the patient's face and the anaesthetist by sterile towels. The incisions employed vary with the size and position of the tumour. The primary object is to remove the growth, together with the whole gland and all its accessible lymphatic connexions; the question of being able to close the wound subsequently is of secondary importance. As a rule, sufficiently wide undercutting will allow very extensive wounds to be closed; but when this is impossible skin grafting can be adopted, and no lengthy convalescence need ensue.

In planning the incision the growth should be taken as the centre of a circle with a diameter 4 to 5 in. (10 to 12.5 cm.). It is convenient to prolong the upper and lower portions upwards towards the axilla and downwards towards the epigastrium so as to secure a straight line for the final suture (Fig. 2). The upper incision is prolonged towards the axilla, and runs up and curves down towards the insertion of the pectoralis major to the humerus.

The dissection of the axilla is started first in order to avoid an unnecessarily prolonged exposure of the chest wall. The skin flaps are undercut and retracted; a transverse incision in the fascia at the level of the insertion of the pectoralis major is made, the cephalic vein identified, and the anterior border of the latissimus dorsi exposed. The upper, lower, and lateral limits of the axillary dissection are thus identified. The costo-sternal portion of the pectoralis major is divided close to its insertion and retracted inwards (Fig. 3). The axillary fascia is incised so as to expose the axillary vein, and the dissection is then carried upwards and inwards towards the clavicle. The interval between the two parts of the pectoralis major is opened up and the costo-sternal portion retracted downwards, thus exposing the pectoralis minor muscle. By retracting the clavicular head of the pectoralis major upwards the insertion of the pectoralis minor into the coracoid process can be seen and divided close to the bone. It is important to divide the tendon of the minor pectoral muscle close to the bone, as no vessels are cut and no bleeding takes place. The two pectoral muscles are then retracted downwards and the axillary fat and lymphatics can be dissected away from the axillary vein. Care is taken to identify and preserve the nerve to the latissimus dorsi and the nerve of Bell, both of which are exposed in the posterior part of the wound. Hot saline packs are placed in the axillary wound.

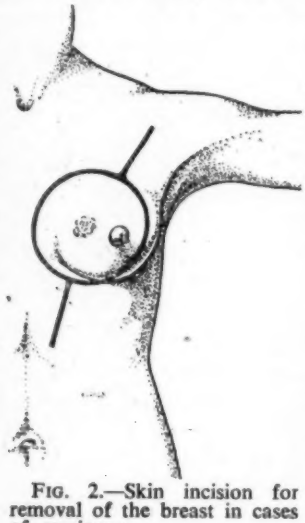


Fig. 2.—Skin incision for removal of the breast in cases of carcinoma.

The lateral flap is then undercut and the whole breast and axillary contents are drawn over towards the middle line; the dissection is carried forwards and inwards, starting from the outer border of the latissimus dorsi. The inner aspect of this muscle is cleared as well as the axillary surface of the subscapularis. The subscapular nerves are identified and protected, and some branches of the subscapular vessels will need ligature. The serratus magnus can then be denuded of the overlying fascia, care being taken to secure branches of the intercostals,

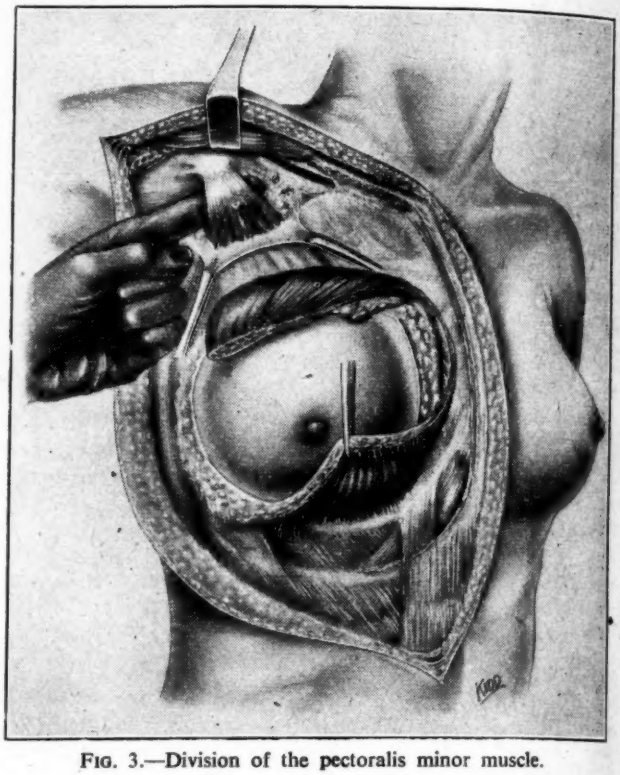


Fig. 3.—Division of the pectoralis minor muscle.

and finally the attachments of the pectoral muscles to the ribs and sternum are divided from below, anterior and lateral penetrating branches of the internal mammary vessels being ligated. The midline of the sternum is thus reached, a portion of the rectus sheath being included in the dissection. The breast is then turned back to its original position and the medial skin-flap is dissected up across the middle line, the advantage of doing this step last being that the vessels have already been secured in the deep dissection. A few strokes with the scalpel then separate the fascia in the sternal midline, and the breast and axillary contents are removed (Fig. 4). Great care is taken with haemostasis, as there is considerable oozing from such a large raw area. The diathermy cautery proves an excellent coagulating point and saves much time. Through a stab-wound a drain is introduced into the axilla for 24 to 36 hours. The skin-flaps are drawn together with tension sutures and the wound is closed. In dressing the case it is advisable to place extra pads of wool in the axilla and under the clavicle so that their presence may assist in the prevention of oozing. The arm is placed close to the side for 24 hours so as to obliterate the axillary space as much as possible and prevent a haematoma forming in that situation. After this the arm should be kept at an angle of 45 degrees away from the trunk so as to allow the skin-flap to fall against the chest wall; this does not interfere with the subsequent free movement of the arm.

The after-treatment consists in making the patient perform deep-breathing exercises each day to prevent any pulmonary complications. The patient can often get up for a few hours on the third post-operative day. Early rehabilitation is important in these cases and prevents the occurrence of thrombosis and pulmonary embolism.

Mammary Carcinoma in the Male

Although cancer of the breast in the male is about a hundred times less common than in the female, every surgeon is faced with these cases. In 30 years of surgical practice I have met with it nine times, and in every case

the patient had been a keen boxer in his youth. It seems to me that trauma may play a more important part in the causation of carcinoma of the breast in the male than is usually thought. In my series of nine cases the ages ranged

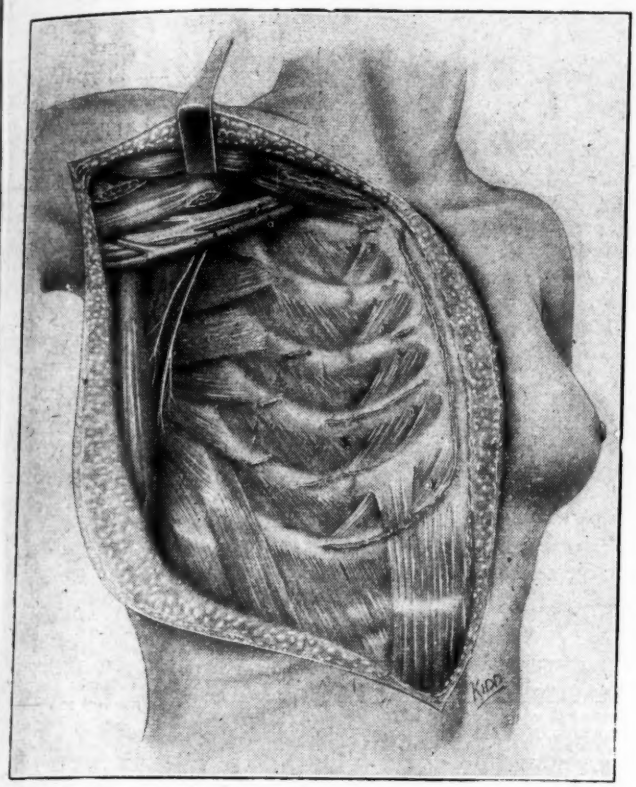


Fig. 4.—The operation area after removal of the breast for carcinoma.

from 36 to 56 years: two were officers in the Navy, two were officers in Commando units in the Army, three were in the Police Force, and two were naval petty officers.

The prognosis of cancer in the male breast is very poor; the small undeveloped breast allows early lymphatic spread before the condition is diagnosed. In all my cases axillary lymphatic glands were present, and in the four cases in which I performed a radical excision the glands were infiltrated with growth. In my series of nine cases the average duration of life after operation was 30 months, all the cases dying of mediastinal metastases.

My experience of these cases has taught me that the correct treatment should be excision of the breast with the tumour, followed by *x*-ray treatment. But even when this has been done the prognosis is very poor in comparison with carcinoma of the breast in the female.

Results of Treatment

It must be acknowledged that in the main the results of treatment of mammary cancer are poor. The prime factor is the delay of the patient in coming for treatment, and this can be improved only by a definite line of propaganda. The Ministry of Health should take steps to improve this situation.

The second factor is inadequate treatment. I would like to associate myself with my friend Sir Stanford Cade, who has stressed so often the fact that the commonest error in treatment is to underestimate the extent of the disease and under-operate or under-irradiate.

One of the biggest problems which faces the profession to-day is the standardization of deep *x*-ray therapy. At the present time *x*-ray therapy varies in different centres and in different hospitals. How can we compare results under these conditions? Confidence is an important factor in everyone's life, and the surgeon's confidence in the radiotherapeutic treatment is a weighty one. How can some surgeons be satisfied if they have no trust in the *x*-ray therapy equipment in their hospitals or centres? To my mind the standardization of good *x*-ray therapy establishments throughout the country is long overdue, and the lack of it is in no small way responsible for the poor results of *x*-ray therapy in mammary cancer.

Those hospitals that are fortunate enough to possess modern high-voltage plants get better results and give confidence to the surgeons attached to them. If a surgeon or practitioner has no confidence in his hospital *x*-ray therapy unit how can he be expected to advise his patients to undergo treatment? To my mind under-irradiation is often worse than no therapy at all.

Can we hope to have a better service under the National Health Service, or will the practitioner, surgeon, and patient be overwhelmed with the forms to fill in, red tape, and inefficiency which characterize the other services that have been nationalized during the last three years? It will be the duty of the medical profession to try to correct this tendency as soon as possible.

EARLY DIAGNOSIS AND TREATMENT OF CARCINOMA OF THE BREAST*

BY

VICTOR RIDDELL, M.D., F.R.C.S.

Surgeon to St. George's Hospital

Cancer of the breast is responsible for the death of more than 7,000 women a year in England and Wales alone, and this figure is rising rather than falling. Two-thirds (67%) of the patients operated upon in this series of 170 radical mastectomies already had metastases in the axillary glands. The main reason for this state of affairs is delay, by the patient, by the general practitioner, by the consultant, and by the hospital.

To avoid the errors responsible for delay by the profession the following vital considerations should be borne in mind:

1. *The Fallibility of Clinical Diagnosis.*—However experienced we are, we cannot differentiate with certainty on clinical grounds alone between the non-malignant and the early malignant swelling. If exploration is not adopted as a guiding principle many a patient with early carcinoma will be placed upon the waiting list as suffering from a non-malignant condition, and all hope of cure may have been cast away.

2. *The Fatal Period of Observation.*—A period of observation is no longer justifiable in the treatment of the doubtful breast lesion. Exploration of the swelling is the only proper procedure if there is the slightest uncertainty.

The practice in some hospitals when a patient is suspected of carcinoma of the breast is for her name to be placed upon a general waiting list to await her turn for a vacant bed. This procedure must be wrong. By such an arrangement the "carcinoma" patient may wait a varying number of weeks while others with non-urgent, non-malignant conditions are admitted in rotation. The names of all cancer patients should be placed upon a special waiting list and arrangements should be made to admit doubtful or early cases immediately. The exploration of a swelling in the breast is an emergency operation.

*Extracts from a Hunterian Lecture delivered at the Royal College of Surgeons of England on Feb. 9, 1948.

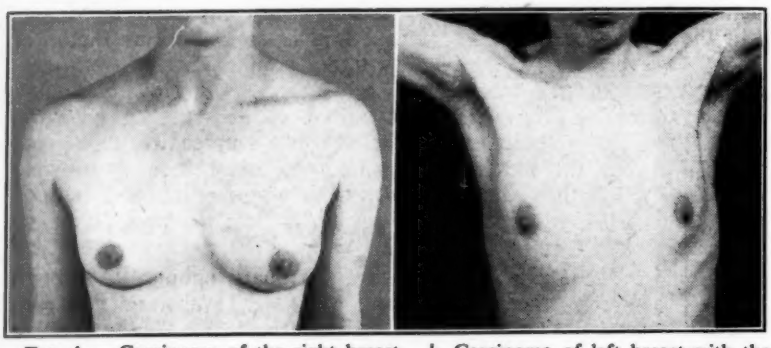


Fig. 1*a*.—Carcinoma of the right breast. *b*. Carcinoma of left breast with the arms in the position for palpation. The outstanding impression on inspection is normality. The configuration of each breast is normal, there is no elevation of the nipple and no attachment to the skin. In each case the only sign of carcinoma was a small hard lump in the breast. The axillary nodes were not palpable clinically, but in both patients metastases were found in the nodes after the operation.

Early Diagnosis

In established carcinoma mammae there may be no deformity of the breast. In early carcinoma mammae there is no deformity of the breast—that is, there is no visible evidence of malignancy. All the cardinal signs of cancer are absent save one—a hard lump; normality is the outstanding visual impression of the breast, which is normal in form and outline and which has normal nipple and normal skin (Figs. 1*a* and 1*b*). The following might be taken as working rules:

General.—(1) A swelling in the breast of a woman of any age is cancer until it is proved otherwise. (2) It is impossible by clinical methods alone to make or to exclude a diagnosis of early cancer. (3) When in doubt, a period of observation is unjustifiable. An exploration must be carried out and the tissue removed sent for section.

Clinical Features.—(1) On inspection the configuration of the breast is normal in early carcinoma (Figs. 1*a* and 1*b*). (2) On palpation a hard lump in the breast, unattached to the skin, is the earliest sign of carcinoma. (3) The "cardinal signs"—adherence to the skin, a retracted nipple, and palpable axillary glands—are the signs of long-standing advanced carcinoma. (4) The inaccuracy of the clinical findings is greatest in the stout patient, in whom fat conceals from palpation both the tumour and the glands: Beware the ample bosom. (5) The urgency for investigation is greatest in those patients in whom the cardinal signs are absent and the diagnosis is uncertain, because it is with these patients that the chances of cure are highest.

Clinical Examination

The breast itself should be examined with the patient stripped to the waist and with both hands clasped behind the neck. This position (Fig. 1*b*) tenses the breast on the chest wall and by giving it a firmer bed renders palpation more reliable than when the arms are hanging by the side. Examination of the supraclavicular fossae is best made from behind, with the shoulders raised and hunched forward so as to make hollows on either side (Fig. 2).

Fig. 2.—The position for examination of the supraclavicular fossae.

Just as negative axillary findings may lead to postponement and delay, so may non-adherence to skin. Yet it is in these cases that the best results can be expected from radical surgery. The urgency is further underlined by the fact that more than half of the "unattached" cancers have already metastasized to the axillary nodes (Table I). No case is as early as it seems.

In those instances in which the decision is difficult or in which the lump appears to be unattached it is worth while to ask the patient to raise her arm straight above her head. In a proportion of cases a dimple will appear over the affected area of the breast and in others adherence will become obvious on gentle manipulation.

The fact that the axillary glands are not palpable unfortunately does not always mean that they have not been invaded. It is important to bear this in mind or a false clinical interpretation of the state of these glands may be made. Table II shows that whereas the clinical error in the case of the palpable glands is small though not insignificant (21% of free of metastases) the clinical error in the case of the impalpable glands is 50%. This fifty-fifty chance that the disease has spread to the axilla, even though the glands are impalpable, further emphasizes the urgency for immediate treatment.

Not uncommonly the first glands to become enlarged lie on the chest wall behind the anterior axillary fold upon the second and third intercostal spaces (Fig. 3). The examiner who feels only high in the axilla regularly misses these glands. As the hand is withdrawn the fingers should be pressed against the chest wall until well below the level of the axillary outlet.

Table I.—*Frequency of Attachment of Tumour to Skin in 170 Patients*

	Glands Invaded	Glands Free
Tumour attached to skin (74%) ..	72%	28%
Tumour unattached to skin (26%) ..	51%	49%

Table II.—*The Impalpable Gland and the Clinical Error in 170 Patients*

	Glands Invaded	Glands Free
Clinically palpable (61%)	79%	21%
Clinically impalpable (39%)	50%	50%

Before proceeding either to mastectomy or to a course of *x*-ray treatment it is essential that palpable secondary deposits in the abdomen and pelvis should be excluded by clinical examination, and the chest, spine, and pelvis should be examined radiologically. It is only in this way that a silent pleural effusion or symptomless secondary deposit in a lung can be discovered.

The adjective "scirrhous" suggests for some a benevolent quality. In the series under review the histological section was described in 39% of the cases as being a "typical scirrhous carcinoma." Yet in 64% of these patients metastatic deposits were already present in the axillary glands at the time of operation. A "scirrhous" carcinoma of the breast can be and often is highly malignant and may run a rapid course.

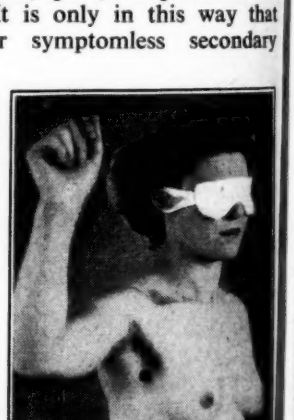


Fig. 3.—"Axillary" glands on the chest wall.

Clinically, cases would seem to fall into one of the following broad categories:

Stage I.—Tumour only.

Stage II.—Tumour and mobile axillary nodes.

Stage III.—Disease advanced, with local metastases.

Stage IV.—Disease advanced, with distant metastases.

Treatment*

Treatment is a radio-surgical problem, and the parts to be played by *x* rays and by surgery must be taken into consideration before embarking upon either. This can only be done effectively if surgeon and radiotherapist see and discuss the case together. The answers to the following questions are helpful in deciding the order of treatment and the extent of the operation.

1. Is the breast condition operable or inoperable? The answer to this question will place the case in the first two or the last two clinical stages of the disease, and by so doing will rule out radical surgery in a proportion of patients.

2. Is the breast (and tumour) removable with or without leaving a defect between the edges of the skin flaps? The answer to this question will give a general indication of whether the initial treatment should be by radiotherapy or by surgery (see below).

3. Is the case potentially early or potentially late in the operable group? The answer to this question will give a general indication of whether the surgical treatment should be by radical or by simple mastectomy. A combination of adverse factors will suggest conservative surgery (see below).

X-ray therapy is still in the process of evolution, and the relative merits of the different irradiation techniques are undecided. There are still some who believe that *x* rays only do harm or at least do no good. Results of cases treated in the ten years before the war showed no clear advantage to be gained from using *x* rays, and in some series (post-operative) they actually appeared to be a disadvantage (Truscott, 1947; Haagensen and Stout, 1942; Kraemer, 1940).

The poor results were due to a number of factors which no longer obtain, such as inadequate treatment from failure to push therapy to the limit of biological reaction, inefficient apparatus, and haphazard technique. These faults have now been corrected, and the value of *x*-ray treatment has been clearly demonstrated (Adair, 1943; Marshall and Hare, 1947; Richards, 1948).

Post-operative X-ray Treatment

Post-operative irradiation is given with the intention of destroying any islets of active cancer cells which may still remain in the field of operation after the primary tumour and the glands have been removed. Ideally the course should be started as soon as the wound is healed, which is likely to be any time after the tenth post-operative day. The method has certain limitations. The dosage is too often dictated by the skin tolerance of the patient rather than by the optimum which is destructive of tumour cells remaining in the operation area, and more often than not there is serious post-operative delay in initiating therapy because of failure of the wound to heal by first intention. Rightly or wrongly these disadvantages have recently given a boost to pre-operative *x*-ray treatment.

Many surgeons exclude their gland-free cases from *x*-ray treatment. They prefer to reserve post-operative irradiation for the treatment of recurrences. This implies that all the axillary glands removed have been sectioned, which is certainly desirable, but it does not always happen. The only safe procedure is to arrange for all patients to have *x*-ray treatment unless it is contraindicated.

*In this survey only treatment by *x* rays and surgery is discussed.

Pre-operative X-ray Treatment

Pre-operative irradiation is given with the intention of sterilizing or restraining the activity of the tumour and the glands. I think it has the following advantages—at least on theoretical grounds. (1) Pre-operative irradiation is more reliable in that there is no delay (except administrative) in starting the treatment, whereas post-operative irradiation may be long delayed by some complication of the operation, such as flap necrosis. (2) If *x*-ray treatment precedes operation any cells which may subsequently be disseminated may be either dead or so devitalized that they are not harmful. (3) It is probable that the skin will tolerate a slightly heavier dose of *x* rays if its blood supply has not been disturbed by previous operative trauma.

There are certain difficulties with pre-operative irradiation. (1) A diagnosis of cancer is required before submitting a patient to a course of *x*-ray treatment. This information is automatically available with post-operative cases—not so with the pre-operative. (2) There is delay before the patient is able to undergo operation. This wait is very irksome to some patients. (3) If the lump disappears under *x*-ray treatment, some patients may refuse operation altogether. (4) It is stated by some that pre-operative irradiation makes subsequent operation more difficult because of increased bleeding. This has not been my experience. The tendency to ooze is a little greater and the tissues are slightly more friable, but on the whole the operation is quite straightforward. (5) If mastectomy is carried out before the skin reaction has developed there is the risk that this may coincide with the healing of the skin flaps, in which case separation of the edges of the wound or sloughing may occur. The optimum irradiation–operation interval is not known. It must be long enough to allow the skin to regain its natural healing qualities but not long enough to allow regrowth of tumour cells. It would appear to be about six weeks.

There is a limit to the scope of *x*-ray therapy to which I should like to draw attention before considering its indications. Many hold that in certain cases pre-operative *x*-ray treatment can convert the surgically incurable into a surgically curable case. This is doubtful. The commonest example is the patient with a fixed mass of axillary glands. I believe that if the case is judged clinically incurable by surgery no amount of *x*-ray treatment will convert it into a surgically curable case however much the tumour mass may seem to disappear.

It is true that the effect of a full course of *x*-ray therapy can be quite remarkable, and that at the end of treatment in radiosensitive cases no lump may be palpable where previously there had been a fixed mass. It is tempting in these circumstances to proceed to radical mastectomy, but I am convinced that this is wrong. Fixation of the glands implies penetration of their capsule by malignant cells. This in turn implies advanced malignancy, and it is reasonable to suppose that a subsequent attempt at clearance of the axilla will serve only to disseminate the disease. Pre-operative *x*-ray treatment may render these patients technically operable, but that is not the same thing as rendering them surgically curable. They are surgically incurable.

It is impossible to lay down any hard-and-fast rules for pre-operative therapy. Its application is being extended in two directions.

1. *As an Alternative to Routine Post-operative Therapy.*—The uniform application of pre-operative *x*-ray treatment is not quite so straightforward as it might appear. If the cardinal signs of cancer are absent, a biopsy will be necessary. It would therefore seem prudent for the time being to continue to employ post-operative therapy for the early cases until trials have shown, which they may not, that pre-operative *x*-ray treatment is to be preferred at all stages of the disease.

2. *In the Presence of a Shortage of Skin.*—Depending on the size of the tumour (relative to the size of the breast) and the extent of skin involvement, patients fall into one of two groups: those in whom it is judged that primary removal of the breast (and tumour) will leave a defect between the edges of the skin flaps, and those in whom it will not leave such a defect. Pre-operative *x*-ray treatment is of particular advantage for most patients in whom a defect is anticipated.

A shortage of skin, although not invariably present, is commonly found when the breast is unusually small, when the tumour is large, when the tumour is widely attached to the skin, and when the tumour has ulcerated through the skin. A defect between the edges of the flaps has two disadvantages: first, it can heal only by skin graft or by granulations and scar tissue, which form a patch vulnerable to subsequent post-operative therapy; and secondly, and more serious, healing is often protracted so that post-operative therapy is sometimes delayed until it may be useless. If such a defect can be anticipated—and to do this the area of skin available for the flaps must be worked out beforehand and not on the operating table—pre-operative *x*-ray treatment should be given. Delay in the healing of the wound subsequent to *x*-ray treatment has not the same significance, as it holds up nothing except the ordinary convalescence of the patient.

Surgical Treatment

Radical mastectomy for many years has been advocated as the best surgical treatment of Stage I and II cases. Recently this has been challenged, and a plea has been put forward for more conservative surgery.

In 1941 an important experiment was launched in Edinburgh, where it was agreed to try out a uniform method of treatment for all operable cases—simple mastectomy followed by post-operative irradiation to the chest wall and the undissected axilla—and submit the results for statistical analysis. This method is the same as that of Keynes (1937), except that *x* rays are substituted for radium and the subpectoral group of glands, if accessible, are removed at the same time as the mastectomy.

In this method Stage I cases are included as well as Stage II cases. The view is taken that if the disease has spread to the axilla surgery will serve only to disseminate it still further, and that if the disease is confined to the breast dissection of the axilla is unnecessary. The five-year survival rate of all operable cases is reported in three groups as follows: 1941–5, simple mastectomy plus post-operative radiotherapy, 56%; 1935–40, radical mastectomy plus post-operative radiotherapy, 44%; and 1930–4, radical surgery only, 35.6% (McWhirter, 1948).

The disadvantages are much the same as those with radium—in particular, the persistence of active malignant cells in the axillary glands after the termination of treatment. That they do persist at least for a time has been proved by carrying out a radical mastectomy after a full course of pre-operative irradiation and examining the axillary and breast material so obtained. Malignant cells were found to persist in the axillary glands of patients treated with *x* rays alone in 92% of cases by Adair (1943) and in 65% by Richards (1948).

The question is, Can *x* rays in Stages I and II (the only stages in which radical mastectomy is done) restrain the local growth and spread of carcinoma in the axilla more effectively than operative clearance? The answer is not yet known. The advocates of *x* rays believe that if the irradiated tissues are not disturbed by operation the cells will eventually either disappear or be rendered harmless by fibrous encapsulation. Those in favour of clearance of the axilla by operation contend that *x* rays are only a "holding" technique, and that recurrences or dissemination must be expected between the fifth and tenth years. Time alone will show which school of thought is right. In the meantime, what attitude are we to adopt in the treatment of our operable patients in regard to dissection or non-dissection of the axilla?

Operable Cases

Stage I and Stage II (Early).—Radical mastectomy combined with radiotherapy should remain the treatment of the early case until a better method has been demonstrated—over a seven-year or preferably a ten-year period, since the natural history of untreated cancer of the breast is three years and three months (Greenwood, 1926)—and for these reasons:

1. No other known method has yet produced results as satisfactory over a similar period. In the series of Stage I cases published by Gordon-Taylor (1938) and in the Leeds series of gland-free cases (Ministry of Health Report, 1926), 84% and 91%, respectively, of the patients operated upon were alive ten years later. These figures approximate closely to the chances of survival among the general population in the same age periods and must therefore be regarded as very satisfactory.

2. Radical mastectomy is based on sound pathological and surgical principles. Local mastectomy for cancer violates these principles because it cuts across the path of spread of the disease.

3. The general standard of radiotherapy is not high enough yet to follow out the Edinburgh procedure, even if this was thought desirable.

4. The continued presence of living cancer cells in the undissected axilla despite *x*-ray therapy has been demonstrated. The danger of these residual cells may be exaggerated and be more potential than actual, but the possibility of their recovering their activity cannot be ruled out. This possibility might be a reasonable risk to take in the more advanced stages of operable carcinoma (late Stage II), but it cannot be so regarded in the earliest stages of the disease, in which the radical operation still offers the best opportunity of clearing all malignant tissues from the axilla.

Stage II (Late).—I believe that in late Stage II cases there is a place for the treatment of operable cancer of the breast by simple mastectomy and irradiation of the undissected axilla. Some surgeons feel that all operable cases should have the radical operation; others consider that the radical operation should not be applied as a routine simply because the patient is classified as belonging to Stage II. Not all patients in Stage II are at the same pathological stage in their illness. Age, site, rate of growth, and extent of skin involvement are the factors which help us to separate the later cases from the earlier ones. Experience alone can guide us, but I think a conservative mastectomy without dissection of the axilla should be seriously considered in Stage II patients—assuming first-class radiotherapeutic services to be available—if a combination of two or more adverse factors is present, such as rapid growth, wide involvement of skin by infiltration or ulceration, age over 65, and possibly a peripherally situated tumour, more particularly if it is in the inner hemisphere.

Inoperable Cases

Stage III.—This group comprises cases with enlarged supraclavicular nodes on either side; fixed axillary nodes; mobile or fixed axillary nodes on both sides; deep fixation of the breast to the ribs; secondary nodules in the skin; or oedema of the arm. (It will be noted that patients with fixed glands are placed in this category.) Radical surgical treatment is absolutely contraindicated in these patients because they have advanced malignant disease. In special circumstances, such as fungation or a large tumour, simple mastectomy may be indicated. *X*-ray treatment, judiciously applied, may be of great value in the treatment of glandular masses and skin nodules. Some

surgeons carry out the radical operation on cancers of the breast associated with enlarged supraclavicular glands provided the glands are mobile and not fixed to form a supraclavicular mass. All the evidence points to the danger of any form of surgical treatment in these patients. Operative intervention at this advanced stage can only hasten the patient's end.

Stage IV.—This group comprises cases with distant metastases in bones, viscera, or lungs. These patients are unsuited for any form of active treatment other than hormonal. *X* rays, however, may help in the relief of pain caused by secondary deposits in bone, particularly when the metastatic process is confined to a solitary deposit—for example, a single vertebra. Although the ultimate prognosis is grave, some of these patients survive for long periods with well-controlled *x*-ray treatment. The pain of brachial neuritis caused by a supraclavicular mass of glands is similarly relieved.

The Operative Mortality of Radical Mastectomy

The operation of radical mastectomy is not yet obsolete. Until it is, operative mortality and morbidity must be reduced to a minimum. Cade (1948) has collected the figures of 22 British surgeons. There were 11,014 radical mastectomies, with 182 deaths—a mortality of 1.65%. In my series of 170 consecutive radical mastectomies there was no operative death—that is, no patient died within one month of operation or while still in hospital.

Summary and Conclusion

It is more than half a century since Halsted first practised his operation for cancer of the breast. While much has been achieved since then by individual effort it is well to remember that a busy surgeon cannot expect to see many more than 500 patients with cancer of the breast. Spread as they must be over 30 to 40 years, conclusions arising from this experience can come only slowly.

It would seem that we have now reached a stage in the history of this disease when it would be of great advantage to be able to test different combinations of surgery and radiotherapy and hormone methods of treatment upon groups of patients on a scale large enough to make the trials of value. Collaboration between individual surgeons as well as between surgeons and radiotherapy centres would make such investigations possible. Collaboration before treatment and the pooling of results afterwards would provide the volume of material which is necessary if expert independent statistical analysis is to be of value, as it can be, in determining future lines of treatment and in determining them within a reasonable span of time.

Early diagnosis is the key to the problem of treatment of breast cancer.

No significant improvement in treatment need be expected until there is wider knowledge of the basic clinical fact that *there is no outward visible change in the appearance of the breast in early malignant disease.*

REFERENCES

Adair, F. E. (1943). *J. Amer. med. Ass.*, **121**, 553.
Cade, Sir S. (1948). *Proc. R. Soc. Med.*, **41**, 129.
Gordon-Taylor, G. (1938). *British Medical Journal*, **2**, 1071.
Greenwood, M. (1926). Ministry of Health Report No. 33, p. 6.
Haagensen, C. D., and Stout, A. P. (1942). *Ann. Surg.*, **116**, 801.
Keynes, G. (1937). *British Medical Journal*, **2**, 643.
Kraemer, W. H. (1940). *Surg. Gynec. Obstet.*, **70**, 570.
McWhirter, R. (1948). *Proc. R. Soc. Med.*, **41**, 122.
Marshall, S. F., and Hare, H. F. (1947). *Ann. Surg.*, **125**, 688.
Ministry of Health Report (1926). No. 34, p. 20 (Leeds Series).
Richards, G. E. (1948). *Brit. J. Radiol.*, **21**, 109, 249.
Truscott, B. McN. (1947). *Brit. J. Cancer*, **1**, 129.

Amending regulations have been made which relax certain prohibitions in the existing orders affecting the importation and sale of mutton. Caseous lymphadenitis is not regarded as communicable to humans, and the amendments bring the regulations into line with present-day practice in the exporting countries concerned.

PAPILLOEDEMA IN EMPHYSEMA*

BY

THOMAS SIMPSON, M.Sc., M.D., M.R.C.P.

Physician, Chase Farm Hospital, Enfield

Papilloedema rarely occurs in emphysema. Cameron (1933) seems to have been the first to record it. Friedfeld and Fishberg (1934) mention the occurrence of papilloedema in a case of severe right heart failure secondary to pulmonary disease but do not give the cerebrospinal fluid pressure. Meadows (1947) records a case and suggests that the papilloedema was secondary to chronic increased venous pressure and polycythaemia, these in turn being due to the chronic chest condition. Beaumont and Hearn (1948) report a case under the title "Reversible papilloedema due to heart failure" and suggest that the cause is increased pressure in the venous cranial sinuses interfering with the filtration processes of the arachnoid villi.

Although I have studied only three cases, the rarity of the condition prompts me to evaluate the causes of papilloedema in emphysema and to suggest their mechanism.

Case Reports

Case 1.—A motor driver aged 54 was admitted to Redhill County Hospital on April 2, 1946. He had had bronchitis for 28 years and orthopnoea for six months. Seven days before admission oedema had developed. On examination he was seen to be extremely cyanosed, orthopnoeic, and oedematous, and ascites was present. The veins of his face were dilated, his eyes were prominent, the conjunctivae were congested, and he complained of poor vision. Bilateral papilloedema and engorged retinal veins only were seen on fundal examination. The venous pressure was raised to 4 cm. above the sternal angle. Clinical and *x*-ray examination revealed emphysema, numerous basal rales, and cor pulmonale. The blood pressure was 140/100. The red cells numbered 5,620,000 per c.mm., and the haemoglobin was 120%. Lumbar puncture could not be done owing to his general condition. On April 27 the papilloedema had receded, the retinal veins were less engorged, and he could see better. Clinically the venous pressure was now at the sternal-angle level, the oedema had gone, his vital capacity was 2 litres, and the blood pressure was 135/90. Also the eyes were less prominent and his head was less congested. He was readmitted on Aug. 7, 1946, in semi-coma, with massive oedema and twitching of the arms. The neck veins were not visibly distended and the blood pressure was 180/90. He was discharged on Sept. 25 with no oedema and minimal cyanosis. He was readmitted on Nov. 25, 1946, with gross oedema, gallop rhythm, and a venous pressure of 7 cm. above the sternal angle. He died four days later. The fundi were not commented on in the last two admissions. At necropsy the lungs showed gross emphysema, and although the medium branches of the pulmonary artery showed a well-marked degree of atheroma the smaller branches were normal microscopically. The heart weighed 500 g., the right ventricular wall being 1.5 cm. thick and the left normal. The brain was not examined.

Case 2.—A builder's labourer aged 46 years was admitted to St. Mary's Hospital, Paddington, on Jan. 5, 1948, with congestive failure. Since 1925 he had had winter bronchitis, and in December, 1947, he was orthopnoeic. Nocturnal ankle oedema started in May, 1945, but it troubled him only towards the end of 1947. On examination he was deeply cyanosed, his eyes were prominent, and oedema and ascites were present. Emphysema, numerous basal rales, and cor pulmonale were present. The blood pressure was 140/80. On Jan. 14 the fundi showed bilateral papilloedema, with extreme engorgement and tortuosity of the retinal veins, normal retinal arteries, and one hard white exudate in the right fundus. At this time the venous pressure measured 2 cm. in the neck, the oedema had gone (mersalyl), but the deep cyanosis remained and he was extremely breathless on movement in and out of bed. The red cells

*Paper read before the Middlesex County Medical Society on March 18, 1948.

numbered 5,700,000 per c.mm. and the haemoglobin was 120%. Renal investigations were normal, and the vital capacity never exceeded 1.5 litres. On Jan. 16 the C.S.F. pressure was 215 mm. of water and the venous pressure 9.8 cm. above the sternal angle. He was discharged on Feb. 13 with the fundal appearances unchanged.

Case 3.—A summary of the clinical notes of this patient is contained in the appendix to the paper by Howarth *et al.* (1947). I quote it in full and add further post-mortem details (Lennox, 1948, personal communication) relevant to my discussion.

> "Male, aged 42. Chronic bronchitis and asthma 10 years. Cyanosed, irritable, and forgetful 1 year. Deep cyanosis, oedema, and ascites. Vital capacity 1,100 ml. E.C.G.: S.R. Right axis shift. ST_3 depressed. P_3 0.25 mv. *X*-ray: pulmonary arteries enlarged. Heart: moderate enlargement. Blood: R.B.C., 5,300,000 per c.mm.; haemoglobin, 93%. Numerous fundal haemorrhages. Papilloedema developing later. C.S.F. pressure greater than 300 mm. No improvement from oxygen and thiouracil. Death after two months. Post mortem: heart weight 440 g. Left ventricle normal. Lungs: emphysema, slight atheroma of pulmonary artery, intimal thickening of small branches of pulmonary artery."

The surface veins of the brain were engorged to an exceptional degree and the convolutions were slightly flattened. Serial section of the brain showed prominent veins. The authors had found the venous pressure to be 5 cm. above the sternal angle; the blood pressure was 118/69, and the arterial O_2 saturation was 42%.

Discussion

Bilateral papilloedema is generally associated with and attributed to raised C.S.F. pressure in the cranial cavity. Patients with papilloedema usually have a higher C.S.F. pressure than those without, in cerebral tumour (Ayer, 1929), for example, or hypertension (Pickering, 1933–4). Of the three cases reported here two showed a raised C.S.F. pressure, as did Meadows's (1947) case. In seven cases of emphysema and cor pulmonale without papilloedema I found the C.S.F. pressures to lie between 45 and 160 mm. of water (Table I). It seems probable, therefore, that the papilloedema in emphysema is likewise due to a raised C.S.F. pressure.

Table I

Case	Sex	Vital Capacity in Litres	C.S.F. Pressure in mm. of Water	Venous Pressure in cm. above the Sternal Angle (S.A.)
A	M	1·1	50	1
B	M (died)	Too dyspnoeic	160	S.A. +
C	M (died)	"	100	5
D	F	0·7	70	0
E	M	1·3	45	11
F	F	1·5	80	0
G	M	1·5	135	0

In congestive cardiac failure and obstruction of the superior vena cava very high venous pressure may be present without papilloedema. In one case of congestive failure the venous pressure measured 35 cm. above the sternal angle, yet only haziness of the disk margins and congestion of the retinal veins were seen by our ophthalmologist, Mr. C. B. Goulden. Owing to the oedema the C.S.F. pressure could not be determined. In two other cases of congestive failure the C.S.F. pressure measured 30 and 22.5 cm. and the corresponding venous pressures were 21.5 and 15 cm. In neither case was papilloedema seen.

Pickering (1942) quotes a case of bronchial carcinoma obstructing the superior vena cava in which the venous pressure was raised by 30 cm. and the C.S.F. pressure was 42 cm., yet papilloedema was absent. It is uncertain why these venous and C.S.F. pressures should be unassociated with papilloedema. These cases with high C.S.F. pressure and no papilloedema differ from the cases of emphysema I have described with high C.S.F. pressure and papilloedema in that in the former venous pressure is generally raised in the head and neck, while in the latter the general venous pressure is more or less normal. For instance, the highest venous pressure recorded was 9.8 cm. above the sternal angle (Case 2) and in this case papilloedema was seen when the venous pressure measured only 2 cm. in the neck.

In the three cases of emphysema, therefore, the raised C.S.F. pressure cannot be ascribed to raised venous pressure, for this on measurement was normal or nearly so. A different cause must be found, and this cause may be sought in the essential functional disturbance of emphysema—namely, deficient haemo-respiratory exchange. In emphysema the O_2 saturation of the arterial blood is low and its CO_2 content high (Meakins and Davies, 1925). Both these changes affect the intracranial vessels, that of CO_2 excess being much more conspicuous. In five patients with emphysema and cor pulmonale without papilloedema who died at this hospital the dilatation of the cerebral veins seen at necropsy was a striking feature (see also Case 3).

Wolff and Lennox (1930) observed the pial vessels of cats directly through a trephine hole in the skull. In two experiments the animals inhaled a mixture of room air and approximately 5% CO_2. Although the CO_2 content of the blood was increased by only 2% there was a 17% increase in the size of the observed pial artery. At the same time the C.S.F. pressure, measured in millimetres of Ringer's solution, rose from 40 to 60. However, Dumke and Schmidt (1942–3), in experiments on the cerebral blood flow in 3 to 6 kg. monkeys, cast doubt on the validity of these observations, finding that anoxaemia was a more powerful dilator of the cerebral vessels than CO_2. They, however, draw attention to the fact that none of their animals showed appreciable hyperpnoea during anoxaemia. Had they done so the reduction in the arterial CO_2 tension might have caused constriction of the cerebral vessels, and this sufficient to counteract the dilator effect of anoxaemia. The increase in cerebral blood flow resulting from anoxaemia may therefore have been considerably greater than it would have been under more nearly normal circumstances.

To explain the difference between this work and that of previous workers Schmidt (1944) says that either the response of the cortex is not representative of the great

Table II

Case	Age	Diagnosis	C.S.F. Pressure in mm. of Water				Hyperpnoea During the Inhalation
			During Inhalation of CO_2		After Cessation of Inhalation of CO_2		
			Initial	Final	Max. Rise	Final	After Voluntary Hyperpnoea — 6 Breaths
A. B.	43	Fibrositis	75	145 (60)	155 (70)	75 (142)	—	Nil
C. D.	65	Chronic bronchitis	85	165 (70)	173 (100)	85 (290)	—	Slight
E. F.	50	Orthostatic albuminuria	80	165 (45)	240 (65)	90 (165)	—	+
G. H.	24	Neurosis	78	165 (90)	180 (120)	78 (205)	63	Nil
I. J.	48	Headaches	75	190 (105)	—	—	50	Nil
K. L.	34	Pleural effusion	120	200 (40)	245	120 (95)	75	+

The numbers in parentheses show the time in seconds after the beginning of the experiment that the pressures were recorded.

mass of brain substance or else species differences exist. (Note that in Case 3 serial section of the brain showed prominent veins.) He concludes that at the present time it seems probable that both may be true. If these observations of Dumke and Schmidt (1942–3) are correct, then priority must be given to O_2 lack over CO_2 excess as a cerebral vascular dilator, but this in no way invalidates my conclusions, since both are present in the cases under discussion.

Dixon and Halliburton (1913–14) studied the effects of various substances on the secretion of C.S.F. from a wide cannula placed in the subcerebellar cisterna of dogs. They found that the inhalation of CO_2 increased the secretion markedly Further, they (1914) studied the effect on the C.S.F. pressure of inhalation of concentrations of CO_2 varying from 3 to 10%. In a few seconds after inhalation of the CO_2 mixture the C.S.F. pressure rose steeply and after stopping the inhalation it fell, but more slowly than it rose. They concluded that of all the conditions which influenced C.S.F. secretion the most important were a deficiency of O_2 and an excess of CO_2 in the blood.

In view of these findings it was decided to observe the effect of inhaling CO_2 on the C.S.F. pressure in human subjects. In six patients not suffering from intracranial or vascular disease the effect on the C.S.F. pressure of inhaling a mixture of 7% CO_2 in 93% O_2 through an oronasal type B.L.B. mask, to which they had been previously accustomed, was observed.

The C.S.F. pressure was recorded after it had become stabilized during natural respiration ; CO_2 mixture was then inhaled for a varying period of time and then discontinued. It was found that after cessation of inhalation the C.S.F. pressure continued to rise to a maximum. The C.S.F. pressure and times were recorded at the end of the period of inhalation, at the point of maximum rise, and finally when the C.S.F. pressure had returned to its original level. In three patients the effect of voluntary overbreathing (six breaths) was determined. The results are shown in Table II.

These observations show clearly that a rise of blood CO_2 raises the C.S.F. pressure in the human subject. They thus support the hypothesis that raised C.S.F. pressure in emphysema is due to CO_2 retention in the blood.

A further possibility must be mentioned. Polycythaemia was suggested by Meadows (1947) as a partial explanation of the papilloedema in his case. Sir Charles Symonds supported this suggestion and said that he had seen similar fundal changes in a case of primary polycythaemia. Loman and Dameshek (1944) describe papilloedema in a man aged 41 with a five-year history of polycythaemia. The general venous pressure was but 8 cm. and the C.S.F. pressure 380 mm. The red cells numbered 8.1 to 9 million per c.mm. and the haemoglobin was 136 to 142%. After venesection the papilloedema subsided, leaving a slight degree of optic atrophy in one disk. They were convinced by intrajugular-pressure studies that venous sinus thrombosis had not occurred. However, none of the cases I have described had a degree of polycythaemia comparable to these cases.

Summary

From a review of the literature and the study of three patients the hypothesis is put forward that papilloedema in emphysema results from a raising of the intracranial pressure.

A rise in general venous pressure does not provide a sufficient explanation, and an intracranial factor is postulated.

It is suggested both from a review of animal experiments and from observation on man that O_2 lack and CO_2 accumulation in the arterial blood in emphysema may produce cerebral vasodilatation adequate to raise the C.S.F. pressure to above the level producing papilloedema.

While polycythaemia may be a contributory factor in certain cases I do not think that it played a part in the cases under discussion.

I studied the cases through the kindness of Dr. G. H. Jennings, Redhill County Hospital, Edgware, Professor Pickering, St. Mary's Hospital, and Dr. R. Harrison, British Postgraduate Medical School. For the necropsy findings in Case 1, I am indebted to Dr. H. Paterson, Redhill County Hospital, Edgware, and for those in Case 3 to Dr. Bernard Lennox, British Postgraduate Medical School. I wish to thank Professors Pickering and McMichael for their help and guidance in the preparation of this paper.

References

Ayer, W. (1929). "The Intracranial Pressure in Health and Disease," Association for Research in Nervous and Mental Diseases, Baltimore, **8**, 189.
Beaumont, G. E., and Hearn, J. B. (1948). *British Medical Journal*, **1**, 50.
Cameron, A. J. (1933). *Brit. J. Ophthal.*, **17**, 167.
Dixon, W. E., and Halliburton, W. D. (1913–14). *J. Physiol.*, **47**, 215.
—— —— (1914). Ibid., **48**, 128.
Dumke, P. R., and Schmidt, C. F. (1942–3). *Amer. J. Physiol.*, **138**, 421.
Friedfeld, L., and Fishberg, A. M. (1934). *J. clin. Invest.*, **13**, 495.
Howarth, S., McMichael, J., and Sharpey-Schafer, E. P. (1947). *Clin. Sci.*, **6**, 187.
Loman, J., and Dameshek, W. (1944). *Trans. Amer. neur. Ass.*, **84**, 70.
Meadows, S. P. (1947). *Proc. R. Soc. Med.*, **40**, 555.
Meakins, J. C., and Davies, H. W. (1925). *Respiratory Function in Disease*, p. 242. Oliver & Boyd.
Pickering, G. W. (1933–4). *Clin. Sci.*, **1**, 397.
—— (1942). *J. Mt Sinai Hosp.*, **8**, 916.
Schmidt, C. F. (1944). *Fed. Proc.*, **3**, 131.
Wolff, H. G., and Lennox, W. G. (1930). *Arch. Neurol. Psychiat.*, **23**, 1097.

OUT-PATIENT ELECTRIC CONVULSION TREATMENT

BY

Sir W. P. MALLINSON, Bt., M.A., B.M., M.R.C.P.
Honorary Assistant Psychiatrist, St. George's Hospital

Electric convulsion treatment has many applications in psychiatry, and the indications for its use in severe mental illness, particularly in the depressive psychoses, are generally clear and well known. It is proposed in this paper to report upon its use as out-patient treatment for less severe and for earlier cases and to attempt to define the indications for and the limitations of such treatment.

In 1733, when the founders of St. George's Hospital met, they were influenced in their choice of the site at Hyde Park Corner by the fame of the locality as a place "where is good air for cure of consumptions, melancholy, and other infirmities." In the light of this pioneering approach to the treatment of melancholy by physical methods it was perhaps not inappropriate that the hospital should provide one of the first services, if not the first, of out-patient E.C.T. clinics. These clinics have been held regularly since November, 1941, and Table I shows the growth of the service. The clinics were initiated by Dr. William Sargant, and

Table I.—*Total Number of Patients Treated*

1942	1943	1944	1945	1946	1947
37	48	32	30	112	180

during the war years Dr. Sargant and Dr. E. T. O. Slater were in charge. Up to the spring of 1946 there was one session each week ; now there are three—on Monday, Wednesday, and Friday. The increased frequency of the sessions not only allows more patients to be treated but enables more intensive treatment to be given where necessary, so that more rapid improvement can be obtained and more seriously ill patients treated.

Technique.—The technique used in the early days is still followed, and the training and keeping together of an experienced staff of assistants is regarded as of great importance. The sister-in-charge is the leader of the team and is responsible for instructing new recruits in their duties. During the treatments Sister attends to the electrodes, the mouth-gag, the administration of oxygen, and supports the patient's chin. Oxygen is given from the moment that the shock is applied until the patient is again breathing well and has a good colour; by this means the more severe degrees of cyanosis are generally avoided. The patient lies upon a firm trolley with no mattress, but with one low pillow for the head and a small sandbag under the dorsal spine. Moderate restraint is used by one assistant on each shoulder and arm, while another assistant, and in the case of specially muscular patients two more, controls the pelvis and lower limbs. Thus, in addition to the psychiatrist and sister, at least three nurses are required—a considerable expenditure of man- and woman-power. However, the method has worked smoothly and with an almost complete freedom from undesirable complications for a long time. During the period of 12 months reviewed later in this paper, in which 170 cases were treated, treatment was terminated in one case after a fracture of the 6th dorsal vertebra had been revealed radiologically. This has caused no permanent disability. No other fractures or dislocations occurred during this period, nor were there any other physical mishaps. The presence of an adequate staff enables the actual treatment to be given and the patient to be transferred to the recovery room with the minimum wastage of time. This is a factor of great importance, since time saved in giving treatment means time gained for interviewing patients and their relatives in order to assess the progress of the illness and the effect of treatment. It is quite unjustifiable ever to give treatment unless such an assessment has been made.

Follow-up Questionary

During May, 1947, a follow-up letter was sent to 150 of the patients who had been treated in the earlier years. Many of these patients had had their treatment two, three, four, or even more years before receiving the questionary, and the minimum period was nine months.

Eighty-five replies were received, a large number of the remaining 65 letters having been returned marked "Gone away"—partly, no doubt, on account of bomb damage to houses and other factors connected with the war. Table II presents a comparison of those patients who reported themselves as being well and those who still had symptoms.

From this follow-up inquiry certain facts emerged. 64% of the patients treated were discharged as recovered or much improved. Some half-dozen had relapsed and approximately the same number had subsequently recovered, although their response to E.C.T. had not been very good and they had been discharged as I.S.Q or only slightly improved. The duration of illness before treatment was considerably greater in the group who responded badly. The chance of recovery was better if there were no neurotic, psychotic, or psychopathic symptoms other than those of the depressive illness; but such symptoms were by no means a bar to recovery, since 50% of those patients in whom they occurred in association with depression recovered. The existence of hysterical, anxiety, or obsessional symptoms, mild mental defect, psychopathic traits, and sexual abnormalities did not prevent a patient being relieved of depression. In such cases the specific effect of E.C.T. appeared to lie in its influence upon mood, and once this had been corrected the neurotic symptoms in many cases, though not in all, also cleared up. Those patients who had not previously had a mental illness showed rather better results than those who had. The average number of treatments for both the recovered and the not-recovered group was five. The best results were obtained in the 31–40 age group and the worst in the older age groups—i.e., 51 and above. There was no significant difference in the results as between men and women or married and single persons.

Psychiatric Unit,
St. George's Hospital,
15, Knightsbridge, S.W.1.

.....194....

Dear

It is now.....months since you received your last electrical treatment in the Out-patient Department at St. George's Hospital, and I should be very interested to hear from you how you are getting on. It would be most helpful if you would answer the following questions:

1. Have you regained your normal health?
2. Do you still suffer from symptoms which trouble you? If so, what symptoms?
3. Have you been under any other hospital—
   (a) as an Out-patient?
   (b) as an In-patient?
   If so,
   (a) When?
   (b) Where?
   (c) For how long?
4. Are you now doing the same work as you were before your illness? If you have changed your work, would you please say why? Do you have to take time off work for illness?
5. Are you able to do your work in a satisfactory manner?
6. Are you able to take part in social activities?
7. Are there any other points you wish to mention?
8. Do you consider that you derived from the electrical treatment? { much / little benefit / no }

I should be most grateful if you would answer these questions, as it will show me how well you are and also help in the treatment of other patients.

Yours sincerely,

Of these 85 patients 78 (92%) had depressive illnesses, three were schizophrenic, and there was one depersonalization syndrome, one obsessional state, one paranoid state, and one psychopathic personality. Sixty-nine of these patients were able to continue to live at home during and after the treatment, ten were admitted to Sutton Neurosis Centre, four to observation wards or mental hospitals, and two were referred back to the psychiatric out-patient departments of other hospitals. During the period in which these patients were treated there was no in-patient accommodation for psychiatric cases at St. George's. Sixty-six patients continued at the same or equivalent work after treatment, four replied that they had been able to take a better job, seven said that their working capacity had deteriorated, and 21 reported that they still had to take time off on account of psychiatric symptoms.

TABLE II *(Follow-up Series)*

	Recovered	Not Recovered
Condition at end of treatment:		
Recovered or much improved	48%	16%
Slightly improved	2%	3%
Not improved	11%	19%
Total	61%	39%
Married	63%	37%
Single	58%	42%
Average duration of illness before treatment	9 months	14 months
Neurotic features	50%	50%
No neurotic features	71%	29%
Previous mental illness	55%	45%
No previous mental illness	66%	34%
Average number of treatments	5	5
Sex:		
Men	62%	38%
Women	60%	40%

In reply to the final item in the questionary 48 patients reported that they had derived "much" benefit from the electrical treatment, 18 reported some or little, and 19 none. The last group included one patient who answered, "None, except that it cured my depression"—a rather curious but perhaps not insignificant tribute to the specific effect of E.C.T. upon mood. Five patients stopped treatment on account of fear or dislike of it, one because his cardiac condition gave some cause for concern after his first treatment although no permanent damage ensued, one moved away from London and continued treatment at another clinic, while one was obliged to stop because no one could be found to accompany him to the clinic. Many patients amplified their answers to the final question.

The following extracts are selected from the most appreciative answers, although there were many others equally favourable.

(1) Mrs. A., aged 39, a clerk; a depressive state with hysterical features; 8 months' duration; received 2 E.C.T. in March, 1944. "As you know, I did not have the full treatment—I had only two; after being ill eight months I was completely cured."

(2) Mrs. B., aged 49, housewife; involutional depressive state; five months' duration; received 4 E.C.T. in April–May, 1945. "I consider that the treatment saved my life."

(3) Mr. C., aged 37, a business manager; depressive state, mainly endogenous; 3 months' duration; received 3 E.C.T. in July, 1946. "A complete cure, with nerves and general health and confidence restored to normal."

(4) Mr. D., aged 39, an electrical engineer, reactive depressive state; two years' duration; received 4 E.C.T. in March, 1943. "A very great benefit. It was the most effective treatment I have ever encountered in my life. I was ill for two years before treatment and was made bright and well after four shocks."

(5) Miss E., aged 47, a shorthand-typist; moderately severe depressive state with mixed reactive and endogenous features; two months' duration; received 3 E.C.T. in January–February, 1946. "I think it was simply marvellous. It changed me from a species of stone to a living person, and I cannot speak too highly of it."

(6) Mrs. F., aged 48, housewife; endogenous depressive state: nine months' duration; received 5 E.C.T. in May–June, 1946. "I consider the treatment wonderful; after five treatments I was my old self and mentally keep well."

The following extract is from a letter from a patient treated in private practice for a moderately severe puerperal depressive state:

"I could never have believed I could feel so fit and happy in so short a time after seven weary months. I have taken a completely new lease of life and can really enjoy and appreciate my baby for the first time since her birth in April."

TABLE III*a*

	Recovered	Much Impr.	Sl. Impr.	I.S.Q.	Total
Men:					
Depressive state ..	24	12	5	15	56
Hypochondriasis ..	—	1	1	—	2
Schizophrenia	—	1	1	1	3
Hysteria	—	—	—	2	2
Anxiety state	—	—	—	1	1
Obsessional state ..	—	—	—	1	1
Paranoid state	—	—	—	1	1
Constitutional inferiority	—	—	—	1	1
Total ..	24	14	7	22	67
Women:					
Depressive state ..	37	14	14	24	89
Hysteria	1	—	—	2	3
Obsessional state ..	—	—	1	1	2
Anxiety state	—	—	—	1	1
Depersonalization ..	—	—	—	1	1
Schizophrenia	—	—	1	—	1
Paranoid state	—	1	—	—	1
Hypochondriasis ..	—	—	—	1	1
Paraphrenia	—	—	1	—	1
Psychopathic pers. ..	—	—	—	1	1
Chronic mania	—	1	—	—	1
Facial causalgia ..	—	—	—	1	1
Total ..	38	16	17	32	103

These extracts are published in the hope that they may help to correct the impression produced by a number of ill-informed and prejudiced statements which have appeared in the medical press. Such statements, however sincere, can only be regarded as pernicious, since they are calculated to dissuade doctors from referring their patients for E.C.T. No greater disservice can be done to the depressive patient than to withhold him from consideration, at least, for E.C.T.

September, 1946–August, 1947

During this period of 12 months 170 patients received E.C.T. in the out-patient department; of these, 103 were women and 67 men. In Table III*a* the diagnoses in this series are related to the results of treatment.

Table III*b* provides a comparison of the results in depressive states with those in all other conditions treated.

TABLE III*b*

	Recovered	Much Impr.	Sl. Impr.	I.S.Q.	Total
Men:					
Depressive states ..	24	12	5	15	56
Others	—	2	2	7	11
Women:					
Depressive states ..	37	14	14	24	89
Others	1	2	3	8	14

Six patients have already relapsed, five refused to continue the treatment, and ten ceased to attend. In one case, previously mentioned, treatment was terminated after a fracture of the 6th dorsal vertebra had been revealed radiologically.

Of the men 57% were classified as recovered or much improved, as compared with 53% of the women. The results in the lowest age group of women compared unfavourably with those for the same group of men, while in the two highest age groups the men responded less well than the women. The numbers treated were too small for any conclusions to be drawn from these observations, but Table IV*b* and IV*c*, by condensation of the categories, present certain of the findings in this series in a more striking manner.

TABLE IV*a*

Age	Recovered	Much Impr.	Sl. Impr.	I.S.Q.	Total
Men:					
Up to 30 ..	4 (33%)	5 (42%)	2 (17%)	1 (8%)	12
31 to 40 ..	6 (40%)	2 (13%)	1 (7%)	6 (40%)	15
41 to 50 ..	10 (48%)	4 (19%)	2 (9%)	5 (24%)	21
51 to 60 ..	3 (18%)	3 (18%)	2 (12%)	9 (52%)	17
Over 60 ..	1 (50%)	—	—	1 (50%)	2
All ages ..	24	14	7	22	67
Women:					
Up to 30 ..	7 (29%)	4 (17%)	3 (13%)	10 (41%)	24
31 to 40 ..	12 (42%)	2 (7%)	5 (17%)	10 (34%)	29
41 to 50 ..	11 (43%)	4 (15%)	5 (9%)	6 (23%)	26
51 to 60 ..	8 (38%)	5 (24%)	2 (9%)	6 (29%)	21
Over 60 ..	1 (33%)	—	2 (67%)	—	3
All ages ..	39	15	17	32	103

TABLE IV*b*

	Men	Women
Recovered and much improved	57%	53%
Slightly improved and I.S.Q.	43%	47%

TABLE IV*c*.—*Men and Women Together*

Age:	Up to 30	31–40	41–50	Over 50
Recovered and much improved	56%	50%	62%	48%
Slightly improved and I.S.Q. ..	44%	50%	38%	51%

TABLE V.—*Average Number of Treatments*

	Men	Women
Recovered	5	6
Much improved	6	8
Slightly improved	4	6
I.S.Q.	3	7

In all the categories the number of treatments received by the women exceeded that given to the men. Treatment is usually given twice a week; in the milder cases once a week may be often enough, but in the more severe cases the quicker improvement obtainable by giving three treatments for the first week or two can reduce the risk of suicide and prevent certain patients having to enter hospital for in-patient treatment. In a suitable and uncomplicated case recovery can be expected after from two to ten treatments.

Disposal

Of these cases 131 were able to remain at home during and after treatment. The disposal of the remainder was as follows: 17 admitted to the psychiatric ward in the Atkinson Morley Branch of St. George's Hospital at Wimbledon (all women, since the male side had not yet been opened); 6 admitted to Sutton Neurosis Centre; 2 admitted to the York Clinic; 1 admitted to Roffey Park Neurosis Centre. One patient was admitted to the Obstetric Unit at St. George's for termination of pregnancy after two treatments; this woman had a severe suicidal depression in a setting of low intelligence. Three patients are continuing to have maintenance treatment—in one case once a fortnight (22 treatments in the year), and in another four to five treatments every 10 to 12 weeks. These are cases which respond excellently to E.C.T. but soon relapse, and the maintenance treatment is being given as a conservative alternative to leucotomy, so far with good results. Out-patient treatment offers special advantages for such cases as these, and it is anticipated that the number receiving a periodical maintenance dose will increase.

Sources

Of the series of cases 137 came to the clinic through the psychiatric out-patient department, having been referred either by their own doctors or from other departments in the hospital, or from the psychiatric out-patient departments of other hospitals where there was no out-patient E.C.T. service. Thirty-three were referred to the clinic by members of the honorary staff of the unit.

Selection of Cases for Out-patient Treatment

1. Psychiatric Indications

By means of a rigorous selection of cases it is possible to achieve an extremely high proportion of successful results with E.C.T. The rate of remissions in the manic-depressive or endogenous type of depressive state varies in most reports between 80 and 100%. The depressions of middle and later life respond very well and reactive depressions often give excellent results. Of the 92 patients in the recent series reported in this paper who responded well enough to be classified recovered or much improved 87 (95%) had depression as the predominating symptom and had been given a diagnosis of depressive state, whether endogenous, involutional, or reactive. The comparatively poor results in other types of illness revealed in Table III may well suggest that the range of case material which has been subjected to E.C.T. has become rather too wide. On the other hand, where the patient stands to gain so much should the treatment be successful, it would be unjustifiable to restrict its use to those cases which present only the clearest indications. The special value of out-patient E.C.T. is in the case which without it would become so severe that admission to a mental hospital, possibly under certificate, would become inevitable, and in the less severe case where the patient, despite prolonged ill-health, would not agree to become a voluntary patient. Out-patient treatment offers such patients a chance to regain their mental health with a minimal disruption of their way of life. The limited facilities available at the present time for in-patient psychiatric treatment constitute another powerful reason for treating as many as possible as out-patients. It is worth while, therefore, to accept for treatment a certain proportion of atypical or borderline cases in which the clinical indications for E.C.T. are disputable.

The case of hysteria (Table III*a*) which recovered after two treatments may perhaps be cited as an example. This was a case of recurrent hysterical aphonia which was resistant to psychotherapy and a quick cure of which was called for because the patient was going abroad. The case of paranoid state classified as much improved was one among the large group of delusional insect infestations which are well known in the skin departments. This woman believed that small insects circulated in her blood stream as the result of a therapeutic injection which she had received many years ago. The insects left the blood stream at night to torment her with their stings and bites. She had severe excoriations of the pubic region and vulva from scratching; she was depressed, was much under weight, and had not slept properly for many months. Her response to E.C.T. was dramatic: she stopped scratching and the skin lesions healed quickly; she slept well, gained weight, and became cheerful and sociable. Admittedly she gained no insight, but she was happy in the belief that the electrical treatment, which she described as "wonderful," had disinfested her blood stream.

At the same time the indiscriminate use of E.C.T. cannot be too strongly condemned. It is far simpler to press the switch on the set than to undertake the psychotherapeutic and social measures called for by many cases of neurosis, and the temptation to adopt the quicker and simpler course is obvious. Such misuse can only bring the method into disrepute, since, apart from the large number of cases which will not improve, there will undoubtedly be some which are made worse—for example, the intellectual obsessional and the very tense anxious patient in whom there is no evidence of depression. Even in the most suitable case the neglect of social, sedative, or psychotherapeutic measures may impair the result, while in borderline cases such measures may be decisive as between success and failure.

It is clear that *depression* is the indication *par excellence* for out-patient E.C.T., and, while it is well known that depression can be disguised in many ways, it would appear to be established that unless depression exists recovery cannot be counted on with much confidence. The diagnosis of mild and atypical forms of depressive illness is, then, the key to success, and it is admittedly often extremely difficult. Recurrent mental illness, even where the presenting symptoms are, for example, obsessive-compulsive or those of the depersonalization syndrome rather than frank depression, is suggestive, as are recurrent attacks of hypochondriasis (the so-called "manic-depressive equivalents"). For the sake of clarity an attempt has been made to distinguish among individual symptoms, between cardinal and subsidiary symptoms. It is not suggested that the list is by any means complete, but it is felt that where two or more of the former exist in combination with some of the latter the giving of E.C.T. should be seriously considered. Where only one cardinal symptom is present the indication for E.C.T. is less definite, but it may be strengthened by the pressure of subsidiary symptoms.

(a) Cardinal Symptoms.—Mood persistently depressed. Morning–evening variation of mood (with some lessening of the degree of depression towards evening). Affective loss (often expressed as loss of *interest* in any kind of activity or of *feeling* towards relatives and friends). Retardation (often showing itself as difficulty in getting through the ordinary day's work—"everything seems too much trouble" or "such an effort"

Indecision, perplexity, agitation. Ideas of self-reproach, delusions of poverty. Ideas of reference. Avoidance of social contacts in a normally sociable person : "I do not seem to be able to enter into conversation now."

(b) Subsidiary Symptoms.—Insomnia, especially difficulty in *getting off* to sleep, associated with a pressure of worrying thoughts. Irritability. Excessive fatigability. Inability to concentrate. Anorexia. Loss of weight. Constipation. Amenorrhoea. Diminution of sex drive. Hypochondriasis.

It would be remiss to conclude this section without emphasizing the importance of *early* treatment, not only in allowing many cases to be treated as out-patients who would otherwise require admission to hospital, but also in preventing the development of secondary reactions—e.g., hysterical elaboration and habituation, which are common complications of prolonged mental as of prolonged physical illness.

2. Physical Factors

The physical contraindications to E.C.T. have been gradually narrowed down as experience of the treatment has increased. Patients over 70 years old and pregnant women have been successfully treated. It has been pointed out that chronic epileptics seldom come to serious harm as the result of a fit, and it is perhaps even less likely that harm will come from a fit in the controlled conditions of the clinic. Certain cardiovascular disorders, such as aneurysm, coronary disease, and auricular fibrillation, still give cause for concern, but each case must be considered on its merits and the seriousness of the mental condition weighed against the physical risk. Hypertension, pulmonary tuberculosis, severe osteoarthritis, recent fractures, peptic ulcer, and some other conditions which were formerly regarded as contraindications are no longer so regarded since the introduction of curarization to diminish the violent muscular contractions of the convulsion. The occasions on which curarization is to be considered essential are infrequent, but it can enable certain patients to have E.C.T. who would otherwise be debarred. For such patients the technique using thiopentone and curare, so well described by Hobson and Prescott,[1] is followed.

3. Social Factors

A relative or friend must be available to escort the patient home after each treatment. Although the post-epileptic confusion almost always clears quickly (except in a few elderly patients with degenerative cerebral changes) and the patient is able to leave the clinic within an hour and a half of receiving treatment, he may still be a little muddled and absent-minded, and the availability of an escort is a *sine qua non*.

Patients who live entirely alone are unsuitable. Apart from the occasional persistence of some degree of confusion and absent-mindedness, there is a risk, albeit a slight one given a careful selection of cases, of a sudden swing from depression to hypomania.

Patients who live very far away are, in general, unsuitable for out-patient treatment. A train or motor journey of much more than one hour's duration after treatment is undesirable. Whenever possible, such patients are asked to make arrangements to stay with relatives or friends in London.

Patients doing intellectual work sometimes find considerable difficulty in carrying on with it during treatment owing to the temporary memory defects which occur. Such difficulties may cause a secondary increase in their depression and seriously retard recovery, and intellectual workers are usually advised to stay off work. Many patients, on the other hand, manage to keep at work apart from the treatment days. In the case of housewives, it is often necessary to make arrangements for lessening the burden of household duties and the care of children ; usually this can be done by enlisting the help of relatives. It cannot be too strongly emphasized that neglect of such measures or of a full inquiry into the social and domestic background may seriously impair the result of treatment.

[1] *British Medical Journal*, 1947, **1**, 445.

Conclusion

In the early days of convulsion treatment the method was regarded with distrust as well as distaste by many if not most psychiatrists. It is admittedly unpleasant to watch, and the scientific basis of its results is unknown. The objection that it is possible to apply it in ignorance of the dynamic psychopathology of the illness is, however, hardly valid, since it is through a study of the psychopathology alone that the true indications for E.C.T. can be elicited and progress assessed. That shocks can be given unskilfully and without proper psychopathological investigation is clearly not a criticism of the method itself but a warning against careless administration. But perhaps the most widely held objection was that convulsion treatment appeared to be a very drastic and hazardous interference with the natural history of an illness which would, at least as often as not, ultimately clear up without it. At the present time it can be said that very few psychiatrists who were called upon to treat depressed patients before the introduction of convulsion treatment and who have now had any considerable experience of E.C.T. would consent to work in a clinic where it was not available. This change of attitude is attributable to two facts which have been learned by experience: (1) it has been proved that, given a sound technique, the physical risks are extremely slight, and (2) E.C.T. can and does cut short by many months or even years illnesses which might eventually clear up spontaneously, but which might equally well become chronic or end in suicide. The social and economic significance of this and the benefit to the patient through the curtailing of his suffering need no emphasis.

Certain objections are still raised on the score that the treatment is greatly disliked or dreaded by the patients. This has been much over-emphasized. Some patients do complain of transient unpleasant after-effects, such as nausea, headache, muscular pains, and absent-mindedness. But rarely are such symptoms so severe or so persistent as to necessitate termination of treatment ; nor is fear of the treatment at all a common cause of premature termination. Where fear or dislike is so severe as to make a patient unwilling to continue it, it is more often than not evidence of incorrect selection of a patient who would be unlikely to benefit from the treatment. The typical depressive patient willingly puts up with such minor and transient discomforts, if they occur, in exchange for relief from his depression. He comes regularly and punctually to the clinic without needing persuasion. One woman patient, a case of recurrent depression, in whom the predominating symptom was a very severe and distressing form of depersonalization, experienced an exacerbation of her depersonalization to a terrifying degree during the recovery period after each treatment: "It seemed as if the horrible dread I have had of losing my identity was enormously increased." This patient suffered intense anxiety during the recovery period, but she came regularly for treatment and made a complete recovery after six shocks. Some patients, having once had an attack of depression relieved by E.C.T., report spontaneously for further treatment when they feel that they may be about to relapse or to have another attack.

Electric convulsion treatment, does, in fact, give results which outweigh all objections so far raised against it, and in the present state of knowledge there is no adequate substitute for it.

A CASE OF GROSS OVERDOSAGE OF SOLUBLE PHENYTOIN

BY

T. N. NAUTH-MISIR, M.B., D.C.H.

Assistant Medical Officer, Oldchurch County Hospital, Romford

Soluble phenytoin is an anticonvulsant now widely used in the treatment of idiopathic epilepsy. The exact site of its action has not been elucidated, although it is generally appreciated that it acts differently from phenobarbitone. Toxic effects due to overdosage have been classified by Blair (1939) into (*a*) nervous symptoms consisting of giddiness, blurring of vision, diplopia, clonic spasm, tremors, muscular irritability, ataxia, and nystagmus; (*b*) mental symptoms consisting of euphoria, excitement, irritability, confusion, delusions, hallucinations, dullness, and depression; (*c*) cutaneous eruptions, varying from a slight erythema to a scarlatiniform or morbilliform rash; and (*d*) gastro-intestinal symptoms such as nausea and anorexia. Other toxic effects include fever and swelling and tenderness of the gums. These toxic effects have been noted in the course of therapeutic usage of the drug and are quickly relieved by reduction of the dose or temporary withdrawal of the drug.

The following case of gross overdosage (self-administered) is, I think, worth recording.

Case Report

A single young woman aged 18 was admitted to Oldchurch County Hospital on the evening of Feb. 12, 1948, with a history of having swallowed a total of 250 tablets of soluble phenytoin (1½ gr. (0.1 g.) each) about eight hours previously. According to her previous history (obtained from her mother) she had been suffering from idiopathic epilepsy since the age of 14 and had been attending a hospital for treatment, which consisted of 1 gr. (0.65 mg.) of phenobarbitone and 1½ gr. of soluble phenytoin thrice daily. This seemed to keep her attacks fairly well under control. During the past year, for instance, she had had only three attacks. Between attacks she appeared quite normal, apart from occasional outbursts of "temper," and was able to manage her work at a sack-making factory satisfactorily. On the day before her admission to hospital her mother had collected a three months' supply of phenobarbitone and soluble phenytoin (the latter consisting of 250 tablets). The mother, it must be added, controlled the supply of tablets to her daughter.

Shortly before her admission to hospital, and about six hours after taking the tablets, she had vomited once, the vomitus consisting of some whitish material only.

On admission the patient was seen to be a well-developed and well-nourished young woman. She was conscious and co-operative. Her main symptoms were double vision, intense generalized headache, and severe giddiness. There was gross cerebellar ataxia so that she was quite unable to sit up in bed or to stand up. When she tried to do so she swayed and reeled in all directions. There was coarse vertical and horizontal nystagmus. No ocular palsies were demonstrable and the pupils reacted normally to light and accommodation. Visual acuity seemed unimpaired and there was no deafness or tinnitus. The speech was slurred. The other cranial nerves appeared normal. Intention tremor was pronounced, and gross ataxia of the lower limbs was present. There was no paresis, paralysis, spasticity, or hypotonia of the limbs. Sensation was unimpaired. None of the deep tendon reflexes were elicited. The plantar responses were extensor. The fundi appeared normal. Apart from a pulse rate of 110 and a blood pressure of 170/100, the other systems remained unaffected. No abnormality was detected in the urine. Gastric lavage produced a thin white solution.

As the patient was conscious and felt comfortable while she was kept flat in bed, no special treatment seemed to be indicated. On Feb. 13 the clinical picture remained much the same. She had slept well during the night and the headache had almost cleared up. Diplopia was absent. The pulse rate had dropped to 90. There was, however, much nausea and vomiting of bile-stained fluid material. Next day the headache had cleared up and the vertigo was much improved. She could now sit up in bed without reeling. Horizontal nystagmus was still present and the speech was still slurred. The plantar responses were now flexor. The blood pressure was 90/60.

On Feb. 16 the ataxia had completely cleared up and she was able to stand and walk about normally. The speech was also improved. There was still some degree of horizontal nystagmus, however. Next day the nystagmus was absent and she was regarded as having completely recovered. On Feb. 22 she had a major epileptic attack. On Feb. 28 she was discharged from hospital.

Unfortunately it was not possible to estimate the soluble phenytoin levels in the blood, urine, cerebrospinal fluid, or gastric contents. Examination on Feb. 13 showed:—urine: acid, trace of albumin present, no other abnormality detected; blood urea: 26 mg. per 100 ml.; alkali reserve: carbon dioxide content, 46 vols. per 100 ml.; blood: haemoglobin, 80% (Haldane); red cells, 4,100,000; white cells, 7,800; platelets, 180,000; bleeding time, 4 minutes.

Comment

Both the patient's and her mother's evidence confirmed that the whole of the three months' supply of soluble phenytoin had been swallowed. Of this amount some was apparently vomited a few hours afterwards and some was withdrawn by gastric lavage. It was obvious, however, that a large amount had been absorbed, although without blood-level readings it is impossible to form any idea of the exact quantity. From a consideration of the clinical features of the case it would seem that the chief effect of the drug was on the vestibular nuclei. The raised blood pressure would suggest an effect on other medullary centres. There was complete absence of any evidence of derangement of cortical function. The headache was probably due to the rise in blood pressure. The escape of the other systems from effects of the drug is as would be expected, it being accepted that soluble phenytoin has no deleterious action on the blood, kidneys, liver, or heart. It is also of interest that a major epileptic attack occurred ten days after the overdose was taken—five days after the patient was regarded as having completely recovered.

Summary

A case of gross overdosage (self-administered) of soluble phenytoin is described. The clinical features consisted mainly of gross cerebellar ataxia, which improved in five days. No specific therapeutic measures were carried out and recovery was good. A major epileptic attack occurred five days after recovery.

I wish to thank Dr. S. Locket, physician to the hospital, for his advice, and Dr. E. Miles, medical superintendent, for permission to publish this case report.

Reference

Blair, D. (1939). *Post-grad. med. J.*, **15**, 344.

The St. John and Red Cross Joint Committee have allocated £150,000 out of funds earmarked for the relief of disabled ex-Servicemen to meet the urgent necessity for more extensive quarters for the nurses at the Star and Garter Home for disabled ex-Servicemen at Richmond. The Star and Garter is one of the homes not included in the national health scheme. Because nearly all the 183 patients are bedridden, or mobile only in invalid chairs, it requires as many as 152 people—nurses, domestic workers, and administrative staff—to look after them.

Medical Memoranda

Late Recurrence After Marsupialization of Echinococcus Cyst of Liver

The following is a case of echinococcus cyst of the liver recurring 20 years after operative removal. An additional interest lies in the fact that the cyst had become subcutaneous.

Case History

The patient, a man aged 43, was seen at the out-patient department at the end of June, 1947, complaining of a continuous pain in the region of and under the right costal margin. The pain also radiated towards the back. He had first noticed it in January, 1947. He had seen several doctors, and all their investigations had been negative. It was known that for several years past he had been suffering from "neurosis." He had been evacuated to the U.K. in 1944 for "anxiety state, chronic, severe, unspecified." He had settled down well at a psychiatric centre and was eventually downgraded to Category B.

Photograph of cyst after removal. The daughter cysts are clearly seen.

He had served in Iraq from 1920 to 1922. While stationed at Edinburgh in 1926 he complained of lack of energy and of pain in the region of the right costal margin. He complained of indigestion, a tightness in the upper abdomen, and regurgitation of food. There was no jaundice or melaena. His Wassermann reaction was negative. On examination a solid irregular swelling which moved on respiration was palpable under the right costal margin. There was a slight increase in the lymphocyte count. A barium meal showed no abnormality. He was thought to be suffering from a carcinoma of the pyloric end of the stomach, and was transferred to a military hospital. There he was given a course of emetine without apparent benefit. A laparotomy was then carried out and a hydatid cyst of the liver was found. From the old notes it appears that the cyst was marsupialized and that the appendix was removed. He made a slow recovery, the wound discharging for many weeks. Subsequently, however, it had remained firmly healed and had not caused any trouble.

After the appearance of fresh symptoms in January, 1947, a barium meal test was carried out in connexion with a medical board and the report was as follows: "The meal revealed a hypertonic stomach, though not amounting to the steer-horn type. The mucosal pattern was normal. The finer details of the duodenum were difficult to see owing to the patient's obesity, but it filled readily without delay. The outline was smooth and not deformed. There was some tenderness *above* the duodenum in the region of the scar. No ulcer niche was seen."

When the patient reported he told me that he was certain his pain was genuine. It had eased off for a while, but had come back and was then mainly localized to the upper end of the scar, where a small swelling appeared at the end of June, 1947, which increased rapidly in size.

On examination I found him to be well nourished. There was a very long right paramedian scar, broad and keloid at its upper extremity, where there was a hard fixed lump the size of a large plum. The skin over the lump was shiny but not hot or red, and it was only slightly tender. A small benign tumour, a chronically incarcerated piece of omentum, or some slow process around an old stitch were considered as a diagnosis; the possibility of a recurrence of the hydatid disease was also kept in mind. The straight x-ray film of the abdomen taken five months previously showed no calcification or other abnormality.

The next day, under general anaesthesia, the tumour was aspirated and about 10 ml. of a clear colourless fluid was withdrawn. An equal quantity of commercial formalin was then injected. Immediate examination of the fluid revealed no scolices but some albumin. A transverse incision was then made encircling the tumour and including the needle-track. The abdominal cavity was soon entered and was packed off with gauze. The subcutaneous lump was seen to be connected with a large pear-shaped cyst arising from inside the liver and projecting from its middle towards the left and the stomach. A line of cleavage was found and the cyst was shelled out intact. There was considerable bleeding from the liver bed, which was controlled by fibrin foam and a gauze pack. On the third day the pack was removed and the patient made a good recovery.

The report of the pathologist (Major H. J. Voss) was as follows: "A thick-walled cyst measuring approximately 10 by 7 cm. The wall appears to consist of laminated fibrous material and is 0.5–1.5 cm. thick. Inside the cyst can be seen numerous hydatid daughter cysts, most of which had separated from the wall of the cyst. Blood capsules in the endocyst were scanty and scolices of *Taenia echinococcus* were demonstrated with difficulty. Microscopical examination: The wall of the cyst consists of laminated fibrous tissue. The inner layer consists of a cellular hyaline-like material having no specific characteristics; the appearances were those seen in a hydatid cyst of long duration."

The following conclusions may be drawn from this case: (1) Marsupialization, though apparently successful, was followed by a recurrence at the same site. (2) All clinical observations, including radiography, were at first negative. Only the fact that the cyst had finally become subcutaneous offered a clue to the true nature of the condition. (3) Vague upper abdominal pain as long as 20 years after an operation for hydatid cyst can suggest a recurrence.

I wish to thank the Officer Commanding the 94th British Military Hospital and the D.M.S. British Army of the Rhine for permission to publish this case, also Major H. J. Voss for the pathological report.

P. G. Konstam,
Major, R.A.M.C.

Formation of Obstructing Band in 21 Days

I previously reported the incidental finding of adhesions causing matting of adjacent coils of small bowel, dense enough to produce intestinal obstruction, that had been formed in 28 days after an abdominal operation (Duff, 1946). The bowel had been found strangulated and severely damaged, and it was reasonable to suppose that an undue amount of lymphatic or haemorrhagic exudation had taken place and that its subsequent organization was responsible.

In the following case there was no damage to the bowel, but obstruction from adhesions arose 21 days after a laparotomy.

Case History

A woman aged 33 had had an interval appendicectomy performed by another surgeon, from which she had made an uninterrupted recovery. No adhesions had been noted. Exactly 21 days later she was readmitted to hospital complaining of colicky abdominal pain and vomiting, symptoms which had arisen that day. After temporizing for about 12 hours it was obvious that a small-bowel obstruction existed, and I performed a laparotomy.

Adhesions were found binding the caecum, omentum, and anterior abdominal wall scar together; the terminal ileum was tightly adherent to the medial side of the caecum. The obstruction was due to a band arising from the caecum, fixed to the posterior abdominal wall, and constricting the ileum about 18 in. (45 cm.) from its termination. The band was divided, and the patient made another uninterrupted recovery. She has remained well since.

Comment

The adhesions undoubtedly followed the previous operation, which, indeed, could not have been performed in their presence. A band is presumably formed by the gluing together of surfaces and their subsequent pulling apart while the adhesion is still plastic enough to stretch but strong enough not to rupture. Boyd (1947) states that such bands cause obstruction by their subsequent gradual contraction. In the above case a band strong enough to cause small-bowel obstruction was formed in exactly 21 days.

Alexander Duff, M.D., F.R.C.S.Ed.,
Surgeon, Salisbury General Infirmary.

References

Boyd, W. (1947). *Surgical Pathology*, 6th ed., p. 266. Philadelphia: Saunders.
Duff, A. (1946). *British Medical Journal*, 2, 264.

Reviews

HALLMARKS OF MANKIND

Hallmarks of Mankind. By Frederic Wood Jones, D.Sc., M.B., B.S., F.R.S., F.R.C.S. (Pp. 86; 23 illustrations. 10s. 6d.) London: Baillière, Tindall and Cox. 1948.

Under this title Professor Wood Jones has published his Cambridge Linacre Lecture and an Arris and Gale Lecture delivered at the Royal College of Surgeons. These lectures "were designed to embrace the two main contentions for the acceptance of which" the author has "striven for thirty years." The first is that, considered solely from the point of view of structure, man is an extremely primitive type, and the second that, though more primitive in basal structure than the living monkeys and apes, man has his own remarkable structural specializations that distinguish him from all other mammals and appear to be his very ancient hallmarks. Professor Wood Jones argues his case with characteristic force and verve, though to some it may seem that certain slain lions are disinterred for belabouring.

In the first lecture Professor Wood Jones states the case for his opinion that the human stock was derived from the main primate stem separately from and probably prior to the emergence of the anthropoid apes, and even, it is suggested, at a pre-catarrhine stage. As Professor Wood Jones rules out of consideration the South American monkeys in the question of human phylogeny, and as he denies primate status to the lemurine group, he is left with an unspecialized tarsioid as the probable primate ancestor of man. To paraphrase Dr. Gaylord Simpson, Professor Wood Jones "wishes to derive man—or perhaps wishes man had been derived—from a vaguely remote early tertiary source independent of the origin of monkeys and apes." It would be rash, in view of our restricted knowledge of primate fossil material, to be dogmatic in denying this possibility, but in the reviewer's opinion the weight of available evidence, palaeontological, embryological, and morphological, appears to be against its acceptance.

In his second lecture Professor Wood Jones discusses certain structural features (among others, the peculiar relationship of the maxilla to the premaxilla, certain dental characters, and the great toe) which can be regarded as distinctive of man. These features are the hallmarks. In silver, however, hallmarks are not inherent in the metal, they are impressed by authority, have been known to be counterfeited, and are limited to a relatively small group of particulate symbols. In a biological system the symbols, in the form of morphological characters, are numberless; they are in constant intra- and trans-individual flux, and they vary from individual to individual in a manner that frequently defies arbitrary limits and definitions. Whether Professor Wood Jones's particular selection of a few of these characters as hallmarks is accepted or not will depend on the reader's willingness to regard these few characters, against the background of the totality of morphological characters of man, as the really significant ones in establishing our concept of the human species.

The lectures are attractively written, but there are a number of trivial misprints, and the absence of a bibliography is to be regretted.

J. D. BOYD.

PSYCHIATRIC RESEARCH

Psychiatric Research. By Cecil K. Drinker, J. Folch, S. Cobb, H. S. Gasser, W. Penfield, E. A. Strecker. Papers read at the dedication of the Laboratory for Biochemical Research, McLean Hospital, Waverley, Massachusetts, May 17, 1946. Harvard University Monograph in Medicine and Public Health 9. (Pp. 113; illustrated. $2.00 or 11s. 6d.) Massachusetts: Harvard University Press. London: Geoffrey Cumberlege (Oxford University Press).

This slim dedicatory volume is a testimony to the great changes that have come over psychiatry in the last quarter of a century. The mental-hospital doctor is no longer the mere custodian of the mentally sick and occasionally the inspired observer of mental phenomena. Advances in neurology, biochemistry, and dynamic psychology have entirely altered psychiatry and have raised the morale of the physicians engaged in what was formerly an unrewarding specialty. It is true that the volume shows what liberal endowment can do to stimulate science, but we must not forget that it needs ability of a high order to make use of such liberality. The essayists of the volume are all leading transatlantic psychiatrists.

After an opening account of the McLean Hospital and the work of pioneers such as Wymans and Carles, Dr. Jordi Folch discusses biochemical problems of brain function; then he rightly emphasizes the significance of the absence of lymphatics and the low vasomotor lability of the neural tissue, and above all its high oxygen consumption and the significance of the blood–cerebrospinal-fluid barrier. This barrier indicates that there is a very specialized neural metabolism at the capillary level, and one in which glucose is directly utilized without the intervention of either insulin or pituitary hormone. Glutamic acid alone among amino-acids can sustain the respiratory action of brain tissue *in vitro* (an important fact in view of the alleged effect of this amino-acid on mental retardation). He discusses the function of the astrocytes in limiting capillary permeability and probably acting as selective and retarding agents, and he considers at length the special role of brain lipoids and the paradoxical facts about oxygen consumption at different ages.

Dr. Stanley Cobb considers in a more general manner the question of integration of mental and psychiatric problems as seen in the Massachusetts General Hospital. He takes as a special problem of integration the condition known more in America than here as neuro-circulatory asthenia and distinguishes it from anxiety neurosis. In many ways this is a central problem in the study of neurosis, where psychical events belong more to experience than to body structure and function. Hence the paradoxical nature of many of the features of these symptom complexes. He rightly concludes that a pluralistic view is necessary before we can fathom each of the personal problems presented to the physician.

Professor Wilden Penfield discusses psychical seizures, and forms from evidence provided by brain surgery and the electroencephalogram the substrate of such mental events as hallucinosis, petit mal, stereotyped behaviour, etc. Here, perhaps, we see the gradual closure of the no-man's-land between the mental and the physical. Dr. E. A. Strecker's essay is a plea for psychosomatic unity in all psychiatric practice and thinking. His treatment of the subject is somewhat diffuse and perhaps needs a more philosophical approach than the author dares to adopt. This volume should interest aspirants to psychiatry and instruct those who have hitherto regarded the subject as either unscientific or a playfield for those of easy virtuosity.

EMANUEL MILLER.

EARLY DIAGNOSIS

Diagnosis in Daily Practice. An Office Routine Based on the Incidence of Various Diseases. By Benjamin V. White, M.D., and Charles F. Geschickter, M.D. (Pp. 693; 360 illustrations. £4 10s.) Philadelphia and London: J. B. Lippincott. 1948.

The main theme of this book is sufficiently unusual to warrant widespread attention. The authors are impressed by the relatively small number of common diseases which are responsible for the bulk of disability and death, a circumstance clearly demonstrated by a section on vital statistics early in the book. They therefore emphasize the need for prompt recognition of these major diseases, particularly in their pre-symptomatic stages, when they are most susceptible to treatment. This goal can be fully attained only by means of routine medical examinations. The authors have worked out a plan of history-taking, clinical examination, and six simple laboratory investigations which is designed to draw attention to the major diseases. The routine examination of people not complaining of disability can so easily prove a barren labour that this guide is most useful.

The largest part of the book is on the diagnostic implications of various symptoms, and there are many tables showing what additional clinical and laboratory evidence is necessary for the physician to proceed from symptom to correct diagnosis.

Here the book is marred by two faults. First, although it is intended to serve as a practical reference for the doctor in general practice, it includes much material on the elicitation of common physical signs of which no medical man should be ignorant. To give one example of many, there are two pages on methods of eliciting tendon reflexes, including diagrams on how to obtain knee-jerks, ankle clonus, and plantar reflexes. Secondly, the authors have been unable to resist mentioning the rare diseases which may be responsible for the symptoms under discussion. As a result, the lists of diseases under many symptoms are of formidable length, and by comparison the accompanying discussions are jejune. It seems a pity that an objective so admirable as the early diagnosis of the major diseases should be obscured by the inclusion of redundant and irrelevant matter.

In spite of these drawbacks this is a brave attempt to raise the level of medical practice and fully deserves study, particularly by those doctors responsible for routine examinations. The book is beautifully produced, and the numerous diagrams, tables, and photographs are models of clarity.

SIDNEY TRUELOVE.

TEACHING HEALTH

Education and Health. By R. Gamlin, M.B., B.Ch., M.R.C.S., L.R.C.P., M.Hyg., and D.P.H. (Pp. 372 ; 69 figs. 12s. 6d.) London: James Nisbet and Co. 1947.

This book consists of a series of essays written for parents and teachers. The first seven chapters are on the mind, its development from our earliest ancestors to the intelligent thinking of modern man. In the first two chapters the author explains clearly the persistence of superstition and many of the defects of thinking still with us, the use of deduction and analogy rather than induction and intuition, the failure to control feeling and striving, wishful thinking, false cause, *non sequitur*, special pleading, and begging the question. The remedy for all this is wide and critical reading, the development of powers of observation, and the mastery of words spoken and written. Should we not all study Sir Ernest Gowers's *Plain Words* ? The third chapter is on the subconscious mind, which can be filled with complexes, stirred by conflicts, and disturbed by repressions ; the author seeks to show how teachers and parents can help the child to maintain a healthy balance between the conscious and unconscious mind. In these three chapters he develops facts and hypotheses upon which the teacher should base his teaching to train minds free from superstition, fearless in facing facts, observant and critical, possessed of a mastery of words, and purged of conflicts, complexes, and repressions: in a word, masters of their destiny and their thoughts.

In the fourth chapter he considers the workings of the human mind and its components ; the instinctive or conscious urge ; the feeling developing to sentiments and senses ; the intellect controlling and directing. Combine these three and you have character. The teacher must seek to instil the will to direct urge and feeling towards a social conscience, so that conduct shall be guided by ethical right rather than for praise, reward, or pleasure. So we learn in the fifth and sixth chapters of maladjustment and delinquency and the opportunities for child-guidance both in the home and at school. In Chapter 7 the author gives a useful account of backwardness.

The remaining chapters suffer somewhat from lack of sequence of thought. Chapter 8 is a valuable account of the wave theory of sound ; in Chapter 9 the author shows how this knowledge can be applied by the pure-tone audiometer and the gramophone audiometer to the problems of schools, and Chapter 10 is an account of colour blindness. But the remaining chapters on " British Fare throughout History," " Dietetics," " The Quest for Pure Milk," " The Care of the Teeth," " Rheumatism in Children," " Parasites of the Skin," " Pioneers in Immunity," and " Immunization against Diphtheria " suffer from being over-simplified accounts of complex subjects. Yet the book must be regarded as a courageous effort to present scientific matter in readable form for people who have responsibilities for the upbringing of children, and its wide reading should bring many benefits.

FRASER BROCKINGTON.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Clinical Electrocardiography. By D. Scherf, M.D., F.A.C.P., and L. J. Boyd, M.D., F.A.C.P. 3rd ed. (Pp. 435. 30s.) London: Heinemann. 1948.

Illustrated with many electrocardiographs.

A Short Practice of Midwifery for Nurses. By H. Jellett, B.A., M.D., F.R.C.P.I., and J. B. Dawson, K.B.E., M.D., B.S., F.R.C.S., F.R.C.O.G., F.R.A.C.S. 14th ed. (Pp. 459. 12s. 6d.) London : J. and A. Churchill. 1948.

A practical illustrated manual for nurses and midwives.

A Short Practice of Surgery. By H. Bailey, F.R.C.S., F.A.C.S. F.I.C.S., F.R.S.Ed., and R. J. McNeill Love, M.S., F.R.C.S., F.A.C.S., F.I.C.S. 8th ed. Part 1. (Pp. 224. 52s. 6d. the set of 5 parts.) London : H. K. Lewis. 1948.

The parts of this edition are not sold separately.

A Pocket Medicine. By G. E. Beaumont, M.A., D.M., F.R.C.P., D.P.H. 2nd ed. (Pp. 208. 9s.) London : J. and A. Churchill. 1948.

An introduction for medical students.

A Textbook of Gymnastics. By K. A. Knudsen. Vol. II. (Pp. 204. 12s. 6d.) London : J. and A. Churchill. 1948.

Exercises mainly for the limbs are described.

Recent Advances in Obstetrics and Gynaecology. By A. W. Bourne, M.B., B.Ch., F.R.C.S., F.R.C.O.G., and L. H. Williams, M.D., M.S., F.R.C.S., F.R.C.O.G. 7th ed. (Pp. 326. 21s.) London : J. and A. Churchill. 1948.

The text has been extensively revised to bring it up to date.

Hygiene. By J. R. Currie, M.A., M.D., LL.D., D.P.H., F.R.C.P.Ed., and A. G. Mearns, M.D., B.Sc., D.P.H., F.R.S.Ed. 3rd ed. (Pp. 724. 35s.) Edinburgh : E. and S. Livingstone. 1948.

Includes new material on statistics, milk legislation, " prefab " design, and aircraft regulations.

Human Histology. By E. R. A. Cooper, M.D. 2nd ed. (Pp. 431. 27s. 6d.) London : H. K. Lewis. 1948.

An illustrated manual for medical students.

Recent Advances in Anaesthesia and Analgesia. By C. Langton Hewer, M.B., B.S., M.R.C.P., D.A. 6th ed. (Pp. 380. 21s.) London : J. and A. Churchill. 1948.

Contains much new material, including a chapter on muscle relaxants.

Dermatology and Venereology for Nurses. By J. H. Stokes, M.D., and J. B. Taylor, B.S., R.N. 4th ed. (Pp. 416. 17s. 6d.) London : W. B. Saunders. 1948.

A textbook for training and qualified nurses.

Human Ecology. By T. Robertson. (Pp. 534. 21s.) Glasgow : MacLellan. 1948.

The author brings his training in biology and medicine to bear on the problems of sociology.

The Truth about the Stork. By E. F. Griffith, M.R.C.S., L.R.C.P. (Pp. 136. 6s.) London : H. K. Lewis. 1948.

An account of sex and reproduction for children.

Chemistry in Nursing. By R. E. Neal. (Pp. 564. 24s.) London: McGraw-Hill. 1948.

A textbook of inorganic and organic chemistry for student nurses.

Manual of Determinative Bacteriology. By R. S. Breed *et al.* 6th ed. (Pp. 1,529. 82s. 6d.) London : Baillière, Tindall and Cox. 1948.

Details of the morphology, habitat, and culture of micro-organisms.

A History of the Heart and the Circulation. By F. A. Willius, M.D., M.S., and T. J. Dry, M.A., M.B., Ch.B., M.S. (Pp. 456. 40s.) London : W. B. Saunders. 1948.

A historical study, with biographies of leading cardiologists.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY OCTOBER 2 1948

A GUIDE TO THE Rh FACTOR

Few laboratory discoveries of recent years have been fruitful so quickly in the clinical field as the recent work on blood groups. During the war the blood transfusion services enjoyed close personal association with many clinicians and scientists who, but for the shortage of more junior staff, would probably not have engaged in such work. Consequently the discovery in 1940 by Landsteiner and Wiener of the Rh factor and their work on its significance in intragroup transfusion reactions, followed in 1941 by the elucidation by Levine and his co-workers of the important part it played in obstetric and neonatal pathology, came at a time when the medical and scientific world was well prepared to receive this new knowledge. The Medical Research Council appealed for help in the collecting of sera and clinical data early in 1942, and the essential facts were quickly confirmed by the late G. L. Taylor and by P. L. Mollison. These M.R.C. workers were later joined by R. R. Race, and with the generous help of clinicians and pathologists throughout Great Britain they were enabled rapidly to extend the field of knowledge both on the clinical side and in relation to Rh antigens and antibodies. The period during the war when the research was carried on at Cambridge was of the greatest value, for the serological work benefited from Professor H. R. Dean's wide knowledge of antigen–antibody reactions, while the genetic studies were subjected to that penetrating scrutiny by Professor R. A. Fisher which culminated in the brilliant analysis and synthesis which has so greatly illuminated the whole subject. The end of the war saw the removal of the M.R.C. unit to London and a resumption of the clinical collaboration with P. L. Mollison which had been so fruitful earlier. The continued interest of the medical and scientific world in Rh problems is seen in the prominence given to it at conferences and in the medical press, and the publication of *The Rh Blood Groups and their Clinical Effects*, by P. L. Mollison, A. R. Mourant, and R. R. Race,[1] will be welcomed in this and other countries. This authoritative monograph by the workers who first contributed to research in Great Britain provides all the most up-to-date information on this complex and controversial subject and lays down simple rules for the guidance of laboratory and clinical workers which should do much to remove confusion and to standardize practice in this field.

The work is conveniently divided into three sections: (1) the serological analysis of the Rh groups; (2) clinical considerations of diagnosis and treatment; and (3) indications for and technique employed in Rh tests. After a brief historical introduction Race gives a clear account of the Rh antigens and antibodies. He uses throughout Fisher's notation as "the only one capable of fully designating the genes, compound genes or chromosomes, and the genotypes." This enables him to make it clear at the outset that Rh-positive means the possession of Fisher's antigen D and that all those who have only the allele d are Rh-negative despite the presence of any other antigen. Having mastered this fundamental distinction, the reader is introduced to the other linked Rh genes, C or c, and E or e, and so to the resulting eight Rh complexes. The frequencies of the commoner gene combinations and the approximate error in assessing the genotypes are given—points of some importance in advising parents about their chances of having a normal infant after one affected by haemolytic disease. The more advanced subdivision of the elementary antigens C, c, and D follows, but this section will prove difficult to the uninitiated reader; nor is it rendered easier by inconsistencies—for example, on page 16 there are listed twelve Rh chromosomes, giving rise to 78 genotypes, but Table IV gives eight Rh chromosomes, including C^wDe but excluding others known to exist (C^wde, CdE, CD^ue, etc.). It also seems arbitrary to base Table V solely on the data of Table IV and one collection of 2,000 samples of blood when other information was available.

Dr. Race distinguishes the two types of Rh antibodies as "saline agglutinating" and "albumin agglutinating," the latter term superseding "incomplete," "blocking," or "hyperimmune" antibody. Representative examples of haemolytic disease due to the rarer Rh antibodies in pure form are given and help to clarify the subject. After a brief mention of the use of Rh tests in cases of disputed paternity and in ethnology this section concludes with a discussion of the genetical basis of the Rh groups in so clear and simple a fashion as to be within the grasp of any serious student. A misprint mars the second calculation on page 25. R_1R_0 is given as CDe/cde instead of CDe/cDe; the penultimate paragraph about χ^2 also does not make sense in the present form.

In his section Mollison describes very clearly the ways in which iso-immunization is brought about. All clinicians who prescribe blood for therapeutic purposes should study the paragraphs on the importance of repeated transfusions and the methods of recognizing and distinguishing the various grades of haemolytic reaction. The greater part of this section is devoted to iso-immunization in pregnancy. The detection of sensitization, the interpretation of the findings, and the effects upon the foetus are all lucidly expounded, but the subject of nuclear jaundice deserves fuller consideration. The differential diagnosis of haemolytic disease is fully discussed and should encourage further study of the pathology of stillbirths and neonatal deaths. Details of the morbid anatomy and histology are not given, but the interested reader has the admirable account by Edith Potter[2] to fall back on. The incidence of maternal toxaemia is higher in the mothers of affected infants, and it is surprising that in the paragraphs about the management of pregnancy when an affected infant is expected no mention is made of toxaemia being the most important reason for therapeutic abortion. In view of the guarded

[1] Medical Research Council Memorandum No. 19, 1948. Published by H.M.S.O., London. Price 1/6.

[2] Potter, E. L., *Rh: Its Relation to Congenital Haemolytic Disease and Intragroup Transfusion Reactions*. London: H. K. Lewis. 1947.

statements about prognosis it is difficult to see on what other ground abortion would be recommended; yet this is a problem about which the specialist is frequently consulted. Otherwise the advice on induction of labour, on confirmation of the haemolytic disease, and on when to transfuse is given with the greatest clarity and precision and should become a standard guide to practice.

Mollison's directions for transfusing infants by various routes and for exchange transfusion will be appreciated, and we commend his advice on the instruments to be used. Fine ophthalmic knives and forceps have proved suitable and should be available in most hospitals. The importance of avoiding sensitization of Rh-negative females by the parenteral administration of Rh-positive blood is emphasized, and the importance of routine antenatal Rh testing as a means of obviating this risk and at the same time conserving Rh-negative blood for those who ought to have it is fully explained. The risks of calling Cde/cde and cdE/cde persons Rh-positive are discussed. This danger still needs stressing, although Cappell drew attention to it as early as 1944 and pointed out that such persons are liable to iso-immunization against D. They must be considered Rh-negative as recipients, but should not be used as Rh-negative donors. Mollison concludes with some remarks on the advice which should be given to parents of affected children about future pregnancies. The 3 to 1 preponderance of homozygous fathers is seen in families where the second child is affected, but with families greater than two the proportion of heterozygous fathers is certainly higher. This exposition will, however, be of the greatest assistance to practitioners who have the difficult task of explaining to parents the loss of an affected child and the outlook for the future.

Laboratory workers who have to carry out the technical procedures will find Mourant's section of great practical value. He gives an admirably lucid account of how and when cells and serum should be tested. Clinicians are reminded of their obligation to maintain supplies of sera by furnishing generous samples of blood whenever a suitable test reagent is encountered. This cannot be stressed too strongly, for without these supplies the work would come to an end, and Mourant rightly points out that at present a few enthusiastic medical officers are providing sera for the whole country. In the discussion on the recognition of individual antibodies the footnote to Table XII is a little misleading, for if anti-C contains albumin-agglutinating anti-D it will react positively in albumin with cDe/cde cells. The same applies to anti-E, and Table XII will not therefore indicate the total antibody content of the serum.

Taken as a whole, this monograph is a fine production. It presents what is now accepted in Great Britain as the best practice in this field irrespective of its origin. Readers new to the subject might be excused for thinking that the only research on Rh in Great Britain had been done by the M.R.C. workers, since there are few references to other British authors. Those who are engaged in the work or who have followed the literature, however, will realize that this valuable memorandum incorporates many ideas which first appeared in print elsewhere and which are now so generally accepted as to require no acknowledgment.

INJURIES CAUSED BY COLD

The literature of the major cryopathies—frostbite, trench foot, and immersion foot—is now enormous, but happily for the general student of the subject the greater part of it consists of clinical descriptions containing no new observations, descriptions of methods of treatment, almost all of them valueless, and pathological guess-work better left unread. Nevertheless the mere bulk of the published work in a variety of languages testifies to the great importance of the subject, especially but not exclusively in time of war. Almost all the papers of any value have been published during or immediately after the two world wars, though much of historical interest was written during the Napoleonic and Crimean campaigns. Although many guesses, some good and some bad, had been made about the pathology of frostbite and trench foot, the first step to a clear understanding was the work of Rotnes and Kreyberg,[1] who in 1932 performed experiments that suggested that the application of carbon-dioxide snow to rabbits' ears produced blockage of the vessels with red cells and consequent necrosis. The suggestion appears to have escaped notice until attention was drawn to it by Raymond Greene[2] in 1943. He approached the problem by a different experimental route and was able to demonstrate histologically that freezing even to solidification does not necessarily result in necrosis and that the changes which occur are, first, vasoconstriction; secondly, vasodilatation; thirdly, structural damage to arterioles, resulting in transudation and perivascular oedema; and, fourthly, a consequent "silting up" of the vessels by agglutinated red cells, followed by necrosis of tissue. He also showed that thrombosis does not appear except occasionally as a later secondary change, and that the deposit of crystals in the cells, regarded by Sir Thomas Lewis as the cause of the necrosis, is, in fact, harmless in itself. Greene's results in true frostbite were confirmed by Lange and Boyd[3] and by others, and were shown to be equally true of trench foot.[4] It is interesting to observe by what diverse experimental methods the same conclusions have been reached. Rotnes and Kreyberg used intravital staining, Greene direct histological examination and photomicrography, Lange and Boyd the injection of fluorescein and observation by long-wave ultraviolet rays and by capillary microscopy.

Intravascular agglutination having been established as an essential part of the pathology, it was a short step to a trial of heparin in the treatment of frostbite. Lange, Wiener, and Boyd[5] and Lange and Loewe[6] produced experimental frostbite in volunteers. The latter found that the injection of heparin in the amount required to keep the clotting time between 25 and 60 minutes completely prevented necrosis, whereas all controls developed areas of necrosis approximately 1 cm. in diameter and from 3 to 5 mm. in depth. Immediate injections of heparin afforded complete protection, but treatment given up to 24 hours after exposure produced results almost as good.

[1] *Acta path. microbiol. scand.*, 1932, Suppl. **11**, 162.
[2] *J. Path. Bact.*, 1943, **55**, 259.
[3] *Surg. Gynec. Obstet.*, 1945, **80**, 346.
[4] Block, M., *Proc. Inst. Med. Chicago*, 1947, **16**, 370.
[5] *New Engl. J. Med.*, 1947, **237**, 383.
[6] *Surg. Gynec. Obstet.*, 1946, **82**, 256.
[7] *Lancet*, 1942, **2**, 695.
[8] *Surg. Gynec. Obstet.*, 1943, **77**, 561.
[9] *J. Bone Jt Surg.*, 1942, **24**, 785.

Two cases of severe accidental frostbite were treated, one six hours after an eight-hour exposure to a temperature of 12° to 13° F. (−11° to −10.5° C.) and one ten hours after a twelve-hour exposure to a temperature of 14° to 18° F. (−10° to −8° C.). In neither case did serious damage ensue, though the authors point out that there can be no certainty that gangrene would have occurred without treatment. It seems highly probable that it would have done so.

Lange, Wiener, and Boyd gave careful consideration to Greene's suggestion[7] that parts injured by cold should be kept cool. Small areas of the skin of three volunteers were frozen by means of a metal capsule kept at −30° C. for half an hour. Each received at least five exposures. They received either no treatment at all or warming for 24 hours without heparin, or immediate treatment for seven days with heparin, or treatment with heparin for seven days after a delay of 24 hours, or treatment with heparin for seven days after 24 hours of treatment by warming. From this experiment it appeared that warmth was definitely harmful. Heparin was of value even when its administration was delayed for 24 hours. On the other hand, in another experiment it was found that cooling with an ice-bag in the interval between exposure and treatment with heparin resulted in a larger lesion than in the controls. Blister formation was completely inhibited by cooling, but occurred immediately afterwards. It may be argued that it is extremely difficult to produce exactly similar lesions experimentally and that the number of the experiments was for this reason too small. It is possible, also, that cooling for a longer period, during which time the damaged vessels would have had more time to heal, might have been beneficial. Nevertheless the experiment is in accord with the findings of Davis and his colleagues,[8] who treated a number of cases in consultation with Greene, and concluded that cooling of the affected parts, though reducing blistering, did not affect the development of gangrene. Another view is taken by Webster, Woolhouse, and Johnston,[9] who found that dry cooling of affected parts relieved the constant burning and bouts of stabbing pain characteristic of chilled limbs, caused subsidence of the swelling and resorption of blisters, and even prevented what appeared to be impending gangrene. In this series cooling was continued for from 6 to 21 days.

All authorities are now agreed that warmth is harmful. Disagreement continues about the degree of cooling to be recommended. If, as seems possible, those who have advised temperatures round about 5° C. have overstated the case, they may at least gain comfort from having drawn attention to the undoubted evils of rapid warming, a practice not yet entirely dead. The use of heparin may in any case make the question of temperature during treatment one of only academic significance.

REPORTS ON VAGOTOMY

In a recent review of the treatment of peptic ulcer by resection of the vagus nerves Alvarez[1] lists over 200 papers going back for 60 years. It is still too soon to pass judgment upon the operation, for current discussions show that there are differences of opinion, and certain problems remain unanswered. The first of these is the scope of the operation. Is vagotomy equally applicable to gastric, duodenal, and anastomotic ulcers, or should its use be confined to the two last types only? Some remarks upon vagotomy for gastric ulcer have recently been made by Dragstedt and Harper.[2] The former is responsible for the present enthusiastic revival of the operation, which was envisaged by Sir Benjamin Brodie in 1814 and practised with success over 20 years ago. He considers that a partial or subtotal gastrectomy should be performed for any ulcer in the antrum or the body of the stomach. He commends vagotomy as a useful procedure for ulcers high on the lesser curvature, even if malignancy is suspected. For these lesions a total gastrectomy is the only alternative. The mortality of this operation is from 10 to 30%, and in malignant cases the prognosis for ultimate survival is poor. If vagotomy is followed by the prompt healing of the ulcer not only is malignancy unlikely but the patient is saved from a hazardous ordeal.

The second question is, Should the nerves be cut above the diaphragm or is section at abdominal operation sufficient? The latter method is now generally adopted because it enables the lesion to be inspected, and any short-circuit that may be thought necessary can conveniently be done. Moore,[3] however, challenges this view, and considers that in possibly 10% of subjects it is impossible to cut all the fibres by the abdominal operation. Walters and his co-workers[4] have studied the anatomy of the vagus nerves and support this opinion. They found in 8 out of 100 subjects the vagi had no consistent course and the oesophageal plexus failed to form common trunks. On this evidence it is difficult to be certain that every fibre can be cut by an operation below the diaphragm. Grimson and his colleagues[5] also used the thoracic route in over 60 cases so as to ensure complete division of the nerves in all cases.

Most surgeons with experience of this operation have found that a gastro-enterostomy appears to be required in certain cases. Here again Moore holds contrary views. As he says, the placing of jejunal mucous membrane in the stomach has been a source of trouble ever since the introduction of posterior gastro-enterostomy. He also points out that the latter operation itself may assist the healing of ulcers in a proportion of cases. Moore attributes the absence of any indication for gastro-enterostomy in his cases to his most careful post-operative regime. Gastric suction is kept up for 48 hours, and only small amounts of fluid are allowed for the first three days. The diet is then cautiously increased, the stomach being aspirated daily. Should any significant residue form, the diet is reduced. It appears that the ineffectual gastric peristalsis is able to manage small quantities of solid food better than liquids.

Earlier reports suggested that the operation of vagotomy carried very little risk to life. Fatalities, however, are recorded, and a consideration of their causes reveals some interesting features. During the operation sudden death may occur when the nerves are gripped prior to section, as has been reported by Weeks and others.[6] In the immediate post-operative period gastric retention may cause much anxiety, and Grimson and his colleagues[5] have reported a death from rupture of the stomach on the seventeenth day. Although the vagus nerves are not thought to carry sensory fibres, there have been several reports of patients dying from a painless perforation many months after

[1] *Gastroenterology*, 1948, **10**, 413.
[2] *Arch. Surg., Chicago*, 1947, **55**, 141.
[3] Ibid., 1947, **55**, 164.
[4] Ibid., 1947, **55**, 400.
[5] Ibid., 1947, **55**, 175.
[6] *J. Amer. med. Ass.*, 1946, **132**, 988.
[7] *Bull. Johns Hopk. Hosp.*, 1947, **81**, 92.
[8] *Amer. J. Physiol.*, 1932, **99**, 375.

section of the nerves. For the proper evaluation of vagotomy two things are necessary: one is the passage of time, and the second, as Johns and Grose[7] stress, is the comparison of groups of patients treated by different methods but all having some clinical and pathological uniformity. So far experience shows that in some cases the immediate results can only be described as dramatic. It remains to be seen, however, if the gastric acidity, mobility, and secretion will return to normal in man, as was found by Vanzant[8] to be the case in dogs.

PROLONGING PENICILLIN ACTION

Until recently the most useful of many devices for obtaining a greater effect from a given dose of penicillin have been the oil-and-beeswax base and *p*-aminohippuric acid. The disadvantage of oil preparations is that only those containing beeswax give a really prolonged action, and this substance is apt to produce unpleasant local effects. The necessity to inject *p*-aminohippuric acid intravenously severely restricts its field of usefulness. This objection does not apply to another substance which also blocks the renal excretion of penicillin, though by a different mechanism: caronamide (4′-carboxyphenylmethane-sulphonanilide) can be given in solution by mouth. The effects of this drug have now been extensively investigated in the U.S.A. both in animals[1] and in normal human subjects.[2 3 4] It has also been shown experimentally that the efficacy of penicillin is increased by raising its concentration in the blood in this way.[5] The latest pharmacological study by Boger and his colleagues[6] may explain some of the minor discrepancies in earlier reports, since they find that response varies in different individuals; they therefore recommend that large doses should be controlled by estimations of the caronamide blood content. This should be 15 mg. per 100 ml. in order to double the penicillin concentration; it can be considerably higher without producing ill effects. To produce this level of caronamide it is necessary to give 3 g. three-hourly or 4 g. four-hourly; there is some evidence that in older patients a smaller dose will achieve the same effect, owing to reduced renal efficiency.

Most of these reports are more concerned with the higher penicillin concentrations attained during the first three hours after a dose of caronamide than with the degree of prolongation of a therapeutic blood level which can be secured. That there must be such prolongation is obvious. According to F. H. King and his co-workers[7] there is still as much as 10 units per ml. of penicillin in the blood of patients also given caronamide three hours after a single dose of 1,000,000 units, as compared with only about one-fifth of this amount in controls. Loewe and his colleagues[8] gave caronamide to patients with subacute bacterial endocarditis due to exceptionally resistant bacteria, together with penicillin in doses varying from 1 to 20,000,000 units daily by continuous intravenous infusion. The increase in the penicillin concentration in the blood varied from two- to seven-fold. The highest level recorded is 90 units per ml.; if such levels have to be maintained this is certainly the best means of doing so.

Loewe and his colleagues[9] have also devised a base containing gelatin, dextrose, and a vasoconstrictor from which penicillin in solution is absorbed slowly. Ercoli and his fellow-workers[10] claim that a very prolonged effect can be obtained with a preparation of potassium penicillin in vegetable oil also containing adrenaline, and Cohn and Kornblith[11] have had good results in treating gonorrhoea with a single dose of this material. Another new development is the use of relatively insoluble penicillin compounds. Whether aluminium penicillin, reported by Reid[12] to be more effective when given at long intervals to experimentally infected mice, has any future remains to be seen. There is more detailed information[13 14] about procaine penicillin (an equimolecular chemical compound of the two substances); this has a low solubility and is administered as a suspension in sesame or cotton-seed oil without beeswax. A single large dose of penicillin in this form may produce an assayable blood level for 48 hours or even longer—though individual response seems to vary greatly—and cases of pneumonia have been successfully treated by the administration of a single dose. This is the greatest degree of prolongation of effect yet recorded, and the method should have many valuable applications if further experience reveals no disadvantages.

[1] Beyer, K. H., Miller, A. K., Russo, H. F., Patch, E. A., and Verwey, W. F., *Amer. J. Physiol.*, 1947, **149**, 355.
[2] Strauss, E., Richburg, P. L., Saba, P. Z., and Alexander, J. E., *J. Lab. clin. Med.*, 1947, **32**, 818.
[3] Crosson, J. W., Boger, W. P., Shaw, C. C., and Miller, A. K., *J. Amer. med. Ass.*, 1947, **134**, 1528.
[4] Seeler, A. O., Wilcox, C., and Finland, M., *J. Lab. clin. Med.*, 1947, **32**, 807.
[5] Verwey, W. F., and Miller, A. K., *Proc. Soc. exp. Biol., N.Y.*, 1947, **65**, 222.
[6] *J. Lab. clin. Med.*, 1948, **33**, 297.
[7] *Proc. Soc. exp. Biol., N.Y.*, 1947, **66**, 548.
[8] *Science*, 1947, **106**, 494.
[9] *J. Lab. clin. Med.*, 1947, **32**, 832.
[10] *Amer. J. med. Sci.*, 1948, **215**, 498.
[11] Ibid., 1948, **215**, 506.
[12] *Proc. Soc. exp. Biol., N.Y.*, 1947, **66**, 650.
[13] Sullivan, N. P., Symmes, A. T., Miller, H. C., and Rhodehamel, H. W., *Science*, 1948, **107**, 169.
[14] Boger, W. P., Oritt, J. E., Israel, H. L., and Flippin, H. F., *Amer. J. med. Sci.*, 1948, **215**, 250.

TOXICITY OF STILBAMIDINE

"Stilbamidine," which has been extensively used in the treatment of leishmaniasis and also in babesiasis, has also been found to give some relief to patients with multiple myelomatosis.[1] A number of workers have investigated the toxic properties of the drug. Animal experiments have been described by Seager and Castelnuovo,[2] who observed degenerative changes in the liver and kidney: necrosis in the liver affected sometimes the peripheral and sometimes the central zone, and in the kidney there was cloudy swelling of the convoluted tubules. The liver and the kidney, however, are not affected in man. Arai and Snapper[3] point out that no clear evidence has been published of renal and hepatic damage in cases of kala-azar treated with freshly prepared stilbamidine solutions, and that they found no signs of liver damage due to stilbamidine in five patients with multiple myelomatosis who died, despite the much larger doses used in this condition than in kala-azar.

A toxic effect which does occur in man was described by Napier and Sen Gupta,[4] and has been further discussed by the latter[5] and by Kirk and Henry.[6] This is the appearance of anaesthesia over the areas supplied by the sensory branches of the fifth nerve some two and a half to five months after treatment. There is numbness, formication, and itching; the sensation of light touch is lost, but pain, temperature, and pressure are unaffected. It is suggested that this neuropathy is due to toxic degeneration of the principal sensory nucleus of the trigeminal nerve. There is no danger to life, and the condition slowly disappears. The symptoms are not made worse by further stilbamidine injections.

The Croonian Lectures on "Prefrontal Leucotomy" will be delivered by Dr. R. D. Curran, F.R.C.P., before the Royal College of Physicians of London, Pall Mall East, S.W., on Tuesday, Oct. 12, and Thursday, Oct. 14, at 5 p.m.

[1] Snapper, I., *J. Amer. med. Ass.*, 1947, **137**, 513.
[2] *Arch. Path.*, 1947, **44**, 287.
[3] *N.Y. St. J. Med.*, 1947, **47**, 1867.
[4] *Ind. med. Gaz.*, 1942, **77**, 71.
[5] Ibid., 1943, **78**, 537.
[6] *Ann. trop. Med. Parasit.* 1944, **38**, 99.

BRITISH ASSOCIATION

110th MEETING AT BRIGHTON

A common theme running through many of the addresses and discussions at the 110th meeting of the British Association, held at Brighton from Sept. 8 to 15, was the problem of world food production with reference both to requirements and to the scheme of tropical development now in progress in Central Africa. Secondly, there were a number of contributions more specifically of medical or biological interest; and, thirdly, some few others of sufficient interest or importance to deserve mention on more general grounds.

World Food Requirements

Sir Henry Tizard, in his presidential address, suggested that the danger of the present position in regard to food supplies was not fully realized, and quoted the effect of malaria control in British Guiana in illustration of the connexion between preventive medicine and world population. He said:

> People remember only too well the apparent over-production of food in the 1930's, and forget or do not know that since then the population of the world has increased by some 300 million people. A single example of what is now happening, and will probably happen on an ever-increasing scale, will help to illustrate the problem. Malaria has always been one of the most potent instruments of population control. . . . British Guiana has a population of roughly 400,000, which it is probable has remained stationary for the last 20 years. Two-thirds of the population used to live under conditions of severe endemic malaria. The birth rate was low, and the infantile and adult mortality rates high. . . . Malaria is now rapidly disappearing from the colony. In a suburb of Georgetown the death rate was equal to the birth rate during the years 1938–44 inclusive, and the average infantile mortality was about 250 per 1,000. D.D.T. control was introduced in July, 1945. By the end of 1947 the birth rate had doubled, and the infantile mortality rate had dropped to 67 per 1,000. The population is increasing by 10% annually. As the new methods of preventive medicine spread—and that there will be many more to come no one can doubt—we must expect the world population to grow at an even faster rate than it has done in our lifetime unless famine intervenes. It will grow particularly in parts of the world that already have a high density of population, such as India, where the population is now increasing by five million people a year, and Egypt, where there are already 2,000 people to every square mile of cultivated land, and where it pays to have children.

In a later section of his address, discussing tropical African development, he referred to "the chaos and misery" which could result "unless the prevention of disease among plants and animals, and all other scientific problems of the supply of food, are studied on the same kind of scale by men of similar calibre as are the problems of human health"—a compliment indeed to the exponents of tropical hygiene.

In somewhat similar vein it was pointed out by Sir John Russell in the section of agriculture that African development must lead to a higher standard of living and a rising population, and so to a greater demand for millet, the chief Central African grain food, for which science has done "singularly little" as yet. In the section of geography Dr. R. J. H. Church put the case for a colonial institute, operating as part of one of the three principal universities, which would undertake or be in touch with "colonial research in all or most branches of knowledge." He suggested also that if the French and the Dutch both had good colonial atlases, then Britain should have one too; and that, using air photography, the Directorate of Colonial Surveys at Teddington should be able to produce a satisfactory atlas within a reasonable period. Finally, Dr. F. J. Malina, of Unesco, indicated the scope of international research contemplated as a preliminary to any serious development of the tropical Amazon.

Referring to consumption, Professor A. Fleisch, of Lausanne, described a wartime and post-war nutrition survey in Switzerland in which blood counts were used as one index. Whereas a reduction in basic ration from 2,160 to 2,000 calories for an adult in light employment had been followed by only minor changes in the number of red cells, there was a "sharp fall" after a further reduction to 1,800 calories.

Human Blood Groups

A discussion on human blood groups was jointly held by the sections of zoology, anthropology, and physiology. Dr. J. A. Fraser Roberts recalled that blood groups were among the "exceedingly few common and simply inherited human traits" and that their practical importance and consequent large-scale testing "permitted applications to geographical and racial variations without parallel in other living forms." Dr. R. R. Race pointed out that the seven recognized systems of blood groups made over 20,000 recognizably different combinations in England, the commonest having a frequency of 2%, "while the calculated frequency of the rarest is so low that it may never have formed the blood of an Englishman." Dr. C. D. Darlington summarized the evidence for connecting the distribution of the O blood group in Europe with the Th sound in speech. This was the subject of an annotation in the *Journal* of Aug. 14, p. 347. Dr. A. E. Mourant discussed the ethnological distribution of the Rh and MN groups. Whereas the ABO groups showed significant variations over distances of the order of 100 km., he pointed out, the MN and Rh groups appeared to vary more gradually, and the Rh system in particular promised to throw much light on racial relationships. "In Asiatics, American Indians, and peoples of the Pacific," he stated, "the CDe (R_1) and cDE (R_2) gene combinations predominate in varying proportions. Among negroes cDe (R_0) is by far the commonest combination and shows that the negroes are quite different from all the so-called negroids of the East so far tested. In Europe CDe and cDE are common together with cde (r)." Since the present Rh frequencies in Europe appear to be unstable over a long period, it is probable that their distribution is due to a mixing, at the end of the Palaeolithic period, of a stock akin to the modern Basques, who have nearly 30% of dd (mostly cde/cde) individuals, with a predominantly Rh-positive (or D) stock, almost certainly from Asia. All the other characteristics of the Basques are in keeping with the theory that they are the almost pure representatives of a people which, mixing with other peoples from the East, gave rise to modern Europeans. Thus it is that the Basques are the most European of Europeans, while the people of the rest of Europe, Aryans and Jews, Nordics and Alpines, Celts and Slavs, are all half-breeds—"and who shall say that we are any the worse for it?"

Dr. P. L. Mollison discussed the clinical significance of the Rh groups and gave a reminder that haemolytic disease of the newborn in man is paralleled by a similar condition in newborn mules. In this case the mule inherits from its sire, the donkey, an antigen which is foreign to the mare; and the mare forms antibodies which in turn cause destruction of the mule's erythrocytes.

Ape and Human Evolution

Professor W. E. Le Gros Clark discussed the bearing on human evolution of fossil remains of early Miocene apes collected from the Kavirondo Gulf area of Lake Victoria by the British-Kenya expedition directed in the field by Dr. L. S. B. Leakey. "With the accumulation of so much new material," he stated, "it has become apparent that in early Miocene times East Africa was populated by anthropoid apes of many different types, show an astonishing diversity of form and size." Of particular interest are some of the limb bones discovered, for up to recently our knowledge of extinct apes has been practically confined to jaws and teeth. These limb bones consist of the shaft of a humerus, two fragments of clavicle, almost a complete femur and portions of others, and some ankle bones (calcaneum and talus). They evidently belong to one of the large apes, probably *Proconsul* (first described by Hopwood) and are similar in general dimensions to those of a chimpanzee. But they show significant differences from the latter, particularly in the slender proportions of the shafts and long bones and in certain features in which they resemble those of cursorial monkeys rather than the modern brachiating apes. They appear to indicate that these early Miocene apes were lightly built creatures which had not become specialized for a completely arboreal existence but were capable of running and leaping with considerable agility, in strong contrast with modern anthropoid apes. These observations have an important bearing on the problem of human evolution, since many have argued that, in spite of their evident relationship, "limbs of human type could hardly have been derived from those characteristic of the modern anthropoid apes." (The Miocene period is estimated to have lasted for possibly 20 million years and the Pliocene, which followed, for possibly 13 million years.)

In the same section Dr. K. P. OAKLEY described the first successful use of the method of dating fossil bones by comparison of their fluorine content with that of other bones of known age and from the same district. The method is a revival of one proposed, although without explanation, by A. Carnot, a French nineteenth-century mineralogist. It depends on the fact that the hydroxy-apatite (calcium phosphate) of bone gains in stability by conversion to fluor-apatite as fluorine is absorbed from ground water, and at last year's meeting Dr. Oakley had described its attempted use on the skull of "Kanjera man" from the Kavirondo Gulf region. The only result in this case was to suggest that the water of the district must be abnormally high in fluorine content, since all the bones tested, irrespective of age, had developed the maximum proportion of fluorine which is chemically possible; and as a direct result the water supplies of this district have in fact been found to contain an undesirable amount of fluorine for human consumption. This year's comparison, which was carried out in the Government Chemist's Laboratory, was between specimens of bone of known origins from the Swanscombe region of the lower Thames valley and samples of the "Galley Hill skeleton," the antiquity of which has long been subject to discussion. Preliminary analyses show a difference of the order of 20 to 1 in fluorine content between upper Pleistocene and recent, and of 10 to 1 between middle Pleistocene and recent, with the samples of the Galley Hill skeleton coming nearer to recent. "In conjunction with other evidence," Dr. Oakley stated, "they indicate that the Galley Hill skeleton was not contemporary with the 100-ft. terrace deposits in which it was found, but a later burial."

Section of Physiology

In the section of physiology Professor H. HARTRIDGE devoted his presidential address to the case for a polychromatic mechanism of colour vision, which he thus summarized:

> Until a few years ago it was possible to account for nearly all the aspects of human colour perception on the basis of the three-colour theory, but this is no longer the case. This is largely due to improvements in the older methods of investigation and to the invention of new ones. Among the latter may be mentioned the micro-electrode technique of Granit, and the retinal direction effect of Stiles and Crawford. Modern requirements are met by a polychromatic theory comprising seven types of receptor, but there is no necessity for these to have such narrow spectral response curves as those exhibited by Granit's modulators. Modifications of the three-colour and four-colour theories have been examined to see to what extent they can be made to fit in with experimental results. Particular notice has been taken of the possibility that there is polychromatism of the retinal receptors but trichromatism of the nerve paths which connect these to the brain, or even of the brain itself.

Sir HENRY DALE introduced a discussion on the transmission of effects from the endings of nerve fibres. He took as a starting-point the hypothesis that chemical transmission from nerve endings to effector cells or secondary neurones was universal in all efferent fibres. On this basis a number of questions arise, some of which are being answered by current research. Given the existence of cholinergic fibres in which acetylcholine appears to be the sole transmitter, and of adrenergic fibres in which recent evidence suggests noradrenaline rather than adrenaline itself as the primary transmitter, does the finding of a high proportion of histamine in certain fibres (by von Euler) imply the existence of histaminergic fibres as well? Why should chemical transmitters be found along the whole length of fibres, with enzymes to build and destroy them, and not merely at nerve endings, when the evidence is against their concern with intraneural conduction? Why does one known transmitter inhibit and the other augment an involuntary effect or function? How can we combine the physiological evidence of Professor F. R. Miller and others suggesting transmission by acetylcholine at some central synapses with the biochemical evidence of Dr. W. Feldberg and Miss M. Vogt at Cambridge limiting the suggestion to certain neurones only?

Professor F. R. MILLER then summarized the evidence for the stimulation by eserine and acetylcholine of "many varieties of synapses," the effects of both drugs being opposed by atropine. Dr. Feldberg's approach has been through the extraction with saline of the enzyme system responsible for the formation *in situ* of acetylcholine. Like Sir Henry Dale, he made the point that synthesis was a property of the whole neurone and not only of the nerve ending, and he stated that only a few milligrams of tissue were enough for investigation—e.g., in small but well-defined areas of the brain and medulla. Acetylcholine was not the universal synaptic transmitter in the central nervous system, and often, but not always, neurones with high and low acetylcholine content appeared to alternate in both afferent and efferent nerve pathways. The alternation of mechanisms thus suggested he found attractive to the extent that some caution was necessary in interpreting the evidence.

Problems of Old Age

A discussion under this title attracted wide attention, due principally to the challenging statement by Sir ERNEST ROCK CARLING that the old should "revolt" against what he described as "the 60 to 65 convention." "Complacent acceptance of the hitherto economically convenient belief that chronological age is inevitably associated with incapacity," he stated, "is a potent influence in determining its validity. It should be combated resolutely in the interests of individual health and happiness as well as national advantage. There is as much reason to assert that the range should be 65–70 or even higher." Dr. MARJORY L. WARREN followed with an outline of the organization and research needed for the "medical care and welfare of the elderly sick and infirm," but included among her suggested remedies "plans for keeping elderly persons usefully employed whenever possible." Other points which she made included the need for social as well as medical care to assist elderly people to remain at home in comfort and happiness; the desirability of establishing geriatric units based on general hospitals; and the need for the closest liaison between regional hospital boards and local authorities.

Colour Vision in Animals

A discussion on colour vision in animals was held by the section of zoology. This brought a compact statement by Dr. R. J. PUMPHREY on the evidence of experiment, while Dr. G. S. CARTER summarized the evidence of behaviour. Dr. Pumphrey pointed out that training techniques could be applied only to animals which were "active, purposeful, rational, and docile," although in some few cases it was possible to provide experimental evidence of other kinds—e.g., that fishes which could change their colour to match their background would then choose a background to match their colour. "Colour perception," he summed up, "has been demonstrated beyond reasonable doubt among invertebrates in some insects; among vertebrates other than animals in some bony fishes, reptiles, and birds; and among mammals only in some monkeys and apes and man. There is a significant difference between insect and vertebrate colour vision. The former seem to see colour as long as they can see at all, whereas vertebrate vision becomes achromatic at low intensities. All nocturnal vertebrates are probably colour-blind, and the ancestors of the mammals as a group are believed to have been nocturnal." Dr. Carter pointed out that the perception of pattern as well as colour was necessary for the effective use of colour vision. Animals reacting to the detail of other animals he listed as, in the sea, fishes and cephalopods; on land, some insects, a few spiders, and those vertebrates that have colour vision.

Physical Science

In the physical sciences the most important single contribution was probably an account by Dr. GEORG THIESSEN, of Hamburg Observatory, of some new and difficult observations on the general magnetic field of the sun. The effect was to weaken seriously the theory of "cosmic magnetism" advanced by Professor P. M. S. Blackett rather more than a year ago, and to suggest, if only tentatively as yet, that the sun's general magnetism may vary in a cyclical manner. Whereas in 1945 Dr. Thiessen had obtained comparatively high figures, used by Professor Blackett in his theory, in 1947 and 1948 he had failed to find any measurable effect although one-tenth of the 1945 figure should have been detectable. More observations were used in the two later years than in 1945, and to confirm the reality of the apparent variation it would be necessary to extend the work so as to include different phases of the sun-spot cycle. Professor Blackett's theory was, in brief, that any massive and rotating body is automatically a magnet and that

its magnetic properties could be calculated quantitatively from (approximately) its mass, radius, and speed of rotation.

In the same section Mr. D. A. OLIVER described the development of a new permanent magnet alloy, still at the experimental stage, containing a small proportion of the rare element niobium, which has also lately been used in special alloys for jet engines. Dr. D. GABOR described a new principle of microscope design by which it is hoped that the resolution of the electron microscope can be further increased without the necessity for "fully corrected" electron lenses such as those used in optical microscopy.

SPEECH THERAPY

CONFERENCE IN LONDON

London has been the centre for a number of international conferences this summer. Following the Mental Health Congress and the Congress of Industrial Medicine, two smaller conferences of an international character were held at the end of September, one of them a conference on speech therapy, which was attended by delegates from the Dominions, the United States, and six European and two South American countries, and the other the annual congress of the Chartered Society of Physiotherapy, an account of which is held over until next week.

The conference, under the auspices of the College of Speech Therapists, was held in the hall of the Royal Society of Medicine. Mr. DAVID H. PYE, F.R.S., provost of University College, London, who presided over the opening session, mentioned that it was exactly twenty-five years since the establishment in the Phonetics Department of University College of a centre for the correction of speech defects. Speech difficulties, said Mr. Pye, were as old as history, methods of alleviating them were practised by the early Greeks, and treatment was occasionally attempted in the Middle Ages and after the Renaissance, though the methods were largely empirical and did not appear to have been very successful. Only within the last thirty years had it been possible to see the problem in its scientific perspective.

Scope and Aims of Speech Therapy

The first of some thirty papers surveying the whole field of speech disorders was by Miss JOYCE WILKINS, lecturer in spoken language at University College, Nottingham. She pointed out that the reason why it was not until the twentieth century that the importance of speech therapy was recognized was because the spoken word was then beginning to challenge the dominance of the printed or written word. Printing had for many generations dominated education, and the spoken word, which was transitory, was deemed of small importance. Now, with the transmission of sound regardless of barriers of time and space, the wheel had turned, and the importance of speech for good or ill was manifest. Advances in medicine and surgery—especially in neurology and in plastic surgery—had assisted the development of speech therapy.

The number of registered speech therapists in this country was 340. There were six training centres—four in London and two in Scotland—and the course of training took three years. School speech clinics numbered 230. More school clinics were needed, and also facilities for the continued treatment of young people after leaving school. The National Health Service Act did not specify speech therapy among the services to be provided, and its position under that Act had still to be defined, but it was expected that provision would be made for speech therapy centres under the Regional Hospital Boards. The regulations made under the Education Act, 1944, laid it down that education should be provided for certain classes of children, including those with speech defects. It was estimated that from 1.5 to 3% of the children attending school needed some treatment for speech disorders, and in addition many young people attending colleges and universities needed attention. It would be desirable to have general speech training for children who were handicapped by deafness. There were not enough speech therapists in the country for this purpose; speech therapists should be attached to all schools for the deaf, and lip reading should be included in the training of the speech therapist.

The Child Stammerer

A long discussion took place on stammering. The emotional background was reviewed in papers by Dr. LEOPOLD STEIN, of the Tavistock Clinic, and Mr. NORMAN BRANGHAM. Dr. STEIN said that in infancy speech and thought were one entity, but at about the age of 4 there was a splitting apart of thought and feeling on the one hand and utterance on the other. It was not always easy to bridge this gap, especially when it was of more than average width, and disharmony might arise. The speaker was still able to send out his messages, but under stress, so that a stammer resulted. In the conflict resulting from inability to form words the speaker would make a headlong flight towards safety. In reply to a school medical officer who suggested that stammering was not necessarily connected with anxiety, because in his experience a large number of child stammerers were not at all of the shy or nervous type, Dr. Stein agreed that the stammering was not to be defined as an anxiety state; it went psychologically deeper, but anxiety might supervene.

Mr. BRANGHAM said that in its origin stammering was not different from neuroses in general; it was found in a well-differentiated group of personality structures. It represented a specialized form of neurotic conflict; indeed, it represented not only a conflict but an attempt to resolve it. The stammerer had gone a stage further in the resolution of his conflict than the person with neurotic disorder, for while the latter was trying to work out his difficulties internally the stammerer had partially solved his difficulties on the physical level, so that it was probable that sexual disturbances were found less frequently among stammerers than among neurotic personalities in general. The neurotic component in the stammerer had been almost completely abolished.

The experience of one speech therapist related in the discussion may be quoted. She had been treating a small boy, who at last said, "I will never stammer again; I will blink instead."

Dysphasia and Recurrent Speech

Dr. MACDONALD CRITCHLEY addressed the conference on speech disorders, particularly the phenomenon of recurrent utterance. The aphasic person, he said, might be left with a single word or phrase, sometimes "Yes" or "No" or a meaningless snippet of jargon. The master of French poetry Baudelaire, when stricken with aphasia, could utter only three words. When a patient's speech had been restricted for some time to one phrase he might be able to vary the intonation so as to express greeting or affirmation or negation and so on. Hughlings Jackson suggested that the recurrent phrase was the one which the patient was about to utter at the moment of his stroke, but Gowers—in many ways a more accurate observer—believed that it was the phrase he had just spoken. One of Dr. Critchley's patients, wounded on D-day, could say only, "Yes, it's to-day"—very likely his last remark to a comrade who had asked the question. Sometimes such patients with restricted speech would utter something else quite unexpectedly and incongruously. One patient at Queen Square whose speech had been limited for a long period to "Yes" and "No," at a moment when his case was being discussed with a group of students piped up the astonishing word "unilaterality."

Another phenomenon was a repetition of the last word or two of a sentence, or a frequent repetition of the same phrase. Dr. Macdonald Critchley quoted a passage from a speech by one of the most famous men in England to illustrate what was really, whether consciously or unconsciously, a trick of oratory. Another "normal" verbal mannerism was the use of some silly phrase, almost devoid of meaning, to prefix sentences, such as "Don't you know," "As a matter of fact," or, worst of all, "Actually." Some persons were addicted to a verbal tic whereby in the middle of ordinary sentences they uttered an incongruous word or phrase, often an expletive. The

enunciation of the same phrase over and over again in psychotics was a phenomenon belonging to the realm of the illness rather than to that of the dysphasia. There were also persons whose tic or mannerism led them to repeat every question asked them, sometimes with a change of tense or pronoun and sometimes not.

Some remarkable examples of repetition in writing were given by Dr. Critchley. One was a verse by one of the most distinguished of French poets which consisted of the single word "*persienne*" repeated twenty times. The title of the poem was inevitably "*Persienne*"! The patient's previous personality, educational status, and in particular his literary and verbal ability were important. Thus an illiterate person of limited vocabulary was not likely to suffer so much from a slight vascular lesion as an orator or writer. A judge who was accustomed to sum up on the bench extemporaneously, choosing his words with precision, knowing that they might be closely examined in a court of appeal, was probably using speech in the mostly highly evolved way in which it could be employed, and thus he had a very vulnerable speech mechanism, and a small lesion would cause disproportionate suffering and disability.

On the question whether women were more aphasic than men, Dr. Critchley said that women ordinarily were more fluent, but men took more interest in speech for its own sake, deliberated over *le mot juste*, were inclined to use the *double entendre*, the wisecrack, and the pun, and therefore perhaps men had a more vulnerable speech mechanism than women, and the same injury might produce in men a more crippling degree of aphasia.

Dr. W. Russell Brain said that Hughlings Jackson pointed out many years ago that patients who could say nothing else could still swear, and swear, so to speak, appropriately. It seemed to him that the organization in the nervous system for swearing must be different from that for ordinary speech. Men of a certain type whose speech was peppered with lurid adjectives, which were apparently used almost unconsciously, were able nevertheless, when a lady entered the room, to continue their speech without any of these "adornments," rather suggesting a difference in the neural mechanism whereby obscenity could be switched on and off. Not all compulsive utterance, of course, was in the nature of swearing. Did not Dr. Johnson withdraw behind a curtain to utter prayers? Dr. Brain had a patient who after a stroke could say nothing but "No," but he was able to sing, his repertoire consisting of one music-hall song. The ability to sing was worth bearing in mind for the purpose of treatment.

In the four days of the Congress on Speech Therapy papers were presented by members of the College on such subjects as the symptoms and treatment of dysphasia due to head injury, the associated conditions of dysgraphia and dyslexia, the oesophageal voice following total laryngectomy, relaxation therapy and the nervous patient, the school clinic and the speech-defective child, and the psychological approach to the pre-school stutterer. The Californian programme of speech correction in the schools was described by a visitor from that State; a cinematographic instruction demonstration of the visual hearing method of teaching the hearing-handicapped was given from the clinic in Ohio State University, and a Uruguayan visitor described the progress of speech therapy in South America. The work of special schools in Holland, Czechoslovakia, and Denmark was also described, and a French visitor gave an account of the relation of dental medicine to speech therapy. The role of emotional problems in producing disorders of speech was the subject of a paper by Dr. E. M. Creak, of the Great Ormond Street Hospital.

The speech therapists are numerically the smallest of the medical auxiliaries, but the conference fully demonstrated their enthusiasm and pride in their service.

In 1946 the Ministry of Health began intensive training courses in nursing for ex-Service men and women with nursing experience. Out of 179 of these men and women who took the recent final State Examination, 163 were successful. The proportion of passes (91%) is well above the average for normal student nurse training schools. Up to the present date 620 of these ex-Service students have qualified as State Registered Nurses.

Correspondence

Diabetic Coma

Sir,—The paper by Professor R. H. Micks on diabetic coma and his reference to my colleague Dr. Howard F. Root's plan of treatment in the *British Medical Journal* of July 24 (p. 200), and the comments upon it by Drs. Lawrence and Oakley (Aug. 7, p. 310), lead me to send you the summary of treatment we are distributing to doctors taking our courses or at medical meetings.

Treatment of Diabetic Coma

First Hour After Admission

Assign a special nurse, experienced in coma treatment, for the first few hours.

Laboratory

1. *Urine.* Examine for sugar, diacetic acid, albumin, coma casts and pyuria. Catheterize if necessary.

2. *Blood.* Test for sugar and CO_2 content, with emergency report inside the hour. White blood count and non-protein nitrogen also of value.

3. *Search for Complications.* A. History to explain cause of coma. B. Physical examination, noting particularly—(a) State of consciousness, type of respiration, pulse rate, blood pressure, and rectal temperature. (b) Look for soft eyeballs, dry tongue, dilated stomach, cold and mottled skin, and impacted rectum.

4. *Insulin.* 100 units of crystalline insulin subcutaneously at once for adults, if blood sugar exceeds 300 mg. per 100 c.c. and if the blood CO_2 content is 9 millimols per liter (20 volumes per cent) or less. The dose would be proportionately less in cases of recent onset of diabetes or in young children. In cases with blood sugar between 600 and 1000 mg. give 200 units additional, and with blood sugar over 1000 mg. give 300 units additional. In patients in circulatory collapse, give preliminary additional doses of insulin intravenously.

5. *Gastric Lavage.* Use large tube, aspirate completely and wash stomach with warm water with greatest care.

6. Normal saline intravenously, 2000 c.c. and repeat if indicated by dehydration and blood pressure below 90 mm. Hg. Avoid too rapid administration, especially in older patients.

7. Keep patient warm yet avoid burns, as from hot water bottle.

Second to Sixth Hour

Occasionally the gravity of the case necessitates repetition of first hour's total insulin in the second hour.

8. Repeat blood sugar and CO_2 determinations after three hours. For rising blood sugar give insulin 50–200 units, according to physician's judgment of prognosis.

9. *Fluids by mouth* (as soon as tolerated), 100–120 c.c. per hour of broth, ginger ale, orange juice, tea or coffee, to be sipped by patient or spooned by nurse. If nausea and vomiting recur, withhold fluids orally for 12 hours (lavage stomach again if indicated) and then resume.

10. Soft or liquid food such as oatmeal gruel, orange juice or milk diluted half and half with lime water, not to exceed 10 gm. carbohydrate per hour.

11. *Enema* for cleansing and to relieve abdominal distension.

12. Record blood pressure, pulse and temperature; note signs of improvement, or the reverse.

13. Urinalysis for sugar and diacetic acid every hour. Record volumes.

Sixth to Twenty-fourth Hour

14. Repeat blood sugar and CO_2 determinations and give insulin 50–200 units if blood sugar and CO_2 levels are not improving.

Insulin (crystalline) may now be given according to urine tests every 1 to 4 hours if fall in blood sugar has been satisfactory.

If test is—	Red	Orange	Yellow	Green	Blue	
Give—	20	16	12	0	0	units

15. *Urinary output.* Observe this closely and note with alarm any sign of anuria. Treat with 1500 c.c. intravenous saline if shock is persisting. Repeat as necessary. For anuria, associated with hypochloremia, give 50 c.c. of 10 per cent salt solution intravenously. Never give hypertonic glucose solution to promote diuresis. Beware producing excessive diuresis with consequent loss of base, especially of potassium.

Second Day

16. Soft Food—Diet: carbohydrate 100 to 150 gms., protein 50 gms., fat 50 gms.

17. Protamine zinc insulin should be begun, supplemented by crystalline insulin in small to moderate doses before meals, as indicated by blood sugar and urine tests.

THIRD DAY

18. Patient should gradually return to the standard diabetic diet for age and weight with carbohydrate 150 to 200 gms., protein 60 to 100 gms. and fat 60 to 120 gms. daily.

Possibly this summary may be of interest because it provides against excess of treatment or the reverse. Constructive criticisms of this summary will be welcomed. We recently had 92 cases of diabetic coma in succession without a death.—I am, etc.,

Boston. ELLIOTT P. JOSLIN.

Clinical Research

SIR,—The reading of the recent excellent series of articles in the *Journal* on medical research and of Dr. Walshe's letter (Sept. 18, p. 572) has stimulated me to some observations on clinical research, which term seems in need of definition.

Clinical medicine is the investigation and treatment of people who are ill with the object of making them well. Clinical research is the endeavour to advance knowledge while practising clinical medicine. In an ideal world clinical medicine would be reduced to small dimensions through preventive medicine, but it is obvious, with such a large proportion of disease at present unpreventable, that the main endeavour of medical research must until this situation changes be at the disease level.

Various fallacies exist about clinical research. An extreme example, now fortunately rare, is the denial that it exists at all, usually coupled with the assertion that the sole task of the clinician is to exploit the discoveries of the laboratory. Clinicians from all fields of medicine would find it easy to draw up lists, comparable with that given by Dr. Walshe for neurology, which would disprove this fallacy and its endeavour to reduce clinicians to the level of medical helots. A less extreme but more subtle example of the same fallacy is often provided when clinicians retire from the ward to the laboratory for their research. Almost all will agree that a training in laboratory research is an invaluable preparation for clinical research, that most forms of clinical research need, or benefit by, the added precision and definition of laboratory investigations, and that many clinical problems can with profit be transferred to the laboratory. But a clinician who transfers both himself and the problem to the laboratory is not carrying out clinical research but laboratory research.

Another fallacy is to regard physiological research on patients as clinical research, whereas it is really the using of a conveniently situated group of individuals for physiological studies, just as in the same way medical students or nurses are often used. Modern clinical medicine (and perhaps surgery in particular) is a highly developed branch of experimental biology and affords full opportunities for the exploitation of the most fruitful scientific techniques—the experimental method and the accumulation of verifiable quantitative data. But the research worker fresh from the laboratory may find himself in difficulties in the application of these techniques to clinical medicine. The experimental method has often to be modified to fit therapeutic necessities. It is rare for it to be feasible to treat alternate cases and, even when it is, mankind and his diseases are so individualistic that the two groups so formed may not be fully comparable; and the clinical research worker must often seek truth in small numbers.

Research requires careful planning and staff work, a sound plan being equivalent to the initiative of military parlance. But, if one may continue the military metaphor, over such a large area of medicine is the initiative still with the enemy that the intelligence branch of staff work still has enormous importance, with its endeavour to build up a reliable picture of the enemy's design from scraps of incomplete information. And purely observational methods, particularly with the constantly advancing modern methods of observation, still have a big part to play in clinical research.

In conclusion, may I be allowed to congratulate the *British Medical Journal* that in its educational number medical research has been given such an important place.—I am, etc.,

London, W.1. DAVID H. PATEY.

Stainless Steel Wire

SIR,—The report entitled "Stainless Steel Wire for Closing Abdominal Incisions and for Repair of Herniae" by Messrs. A. Lawrence Abel and Alan H. Hunt (Aug. 21, p. 379) is, I believe, an important contribution to abdominal surgery. These authors have had no instance of abdominal disruption or post-operative herniation in more than 2,500 major operations, many of which were in debilitated patients with gastro-intestinal tract malignancy. Wire was first used as a suture material by J. Marion Sims in the closure of vesico-vaginal fistulae, and was first advocated for use in abdominal incisions in 1934 by Babcock. Jones, Newell, and Brubaker, of the Cleveland Clinic, Dambrin, and Kaufmann, Johnson, and Yesser have all reported excellent results with the use of wire as a suture material, yet the majority of surgeons continue to use catgut, silk, and cotton.

My impressions of stainless steel wire for the closure of abdominal wounds may be of interest because I use it exclusively in this regard. I first saw wire used by the late Hugh Hampton Young when I was house officer on his service at the Johns Hopkins Hospital. He employed it in the repair of hypospadias, exstrophy of the bladder, and in operations for pseudo-hermaphroditism with results that are world renowned. Later, as resident in surgery at the University of Michigan Hospital, Ann Arbor, I had the opportunity to observe many patients in whom wire was used for abdominal closure. This suture along with transverse abdominal incisions has been advocated for some time by Coller. Coller has extended the use of wire to include closure of the subcutaneous tissue and skin (each by means of a continuous heavy wire which is pulled out at the end of eight days or so). In the case of the skin this wire is subcuticular. Recently he has used continuous wire also (which is not removed) to close the peritoneum. In the transverse incision interrupted wire stitches are used in the anterior and posterior rectus fasciae and other fasciae. No suture is used in the rectus muscle itself.

Since July 1, 1947, I have used stainless steel wire in all major abdominal incisions made on my service at the Alexander Blain Hospital and Clinic, Detroit. Transverse incisions have been used in all abdominal cases with the exception of three patients with "acute abdomens" in whom the pre-operative diagnosis was too obscure to know where to place a transverse incision. In a few other patients it was necessary to add a vertical limb to an incision which was transverse. In the treatment of herniae the McVay technique (sewing the conjoined tendon to Sir Astley Cooper's ligament) has been used in all inguinal and femoral ruptures except the small indirect inguinal type where excision of the sac alone seems sufficient. Wire has been used throughout.

Incisions closed with wire have been found to be no more difficult to reopen than incisions closed with other materials. This is true even when the peritoneum has been closed with a continuous steel wire stitch. I consider the transverse wounds closed with wire and with subcuticular wire in the skin far less prone to infection or disruption than ordinary vertical incisions closed with catgut and silk. Certainly early ambulation can be employed with far greater confidence when the former type of closure has been made. Cosmetically, the transverse incisions closed with wire give the most superior results I have seen. I agree with Abel and Hunt that vitallium wire is too brittle and expensive to use and that stainless steel wire from all theoretical and practical standpoints is the suture material of choice.

It would be of interest for Abel and Hunt to extend their use of wire to the closure of the peritoneum and of the skin. A subsequent report by them on these aspects of its use would make another valuable contribution to surgical literature.—I am, etc.,

Detroit, Michigan. ALEXANDER BLAIN III.

Prevention of Dental Caries

SIR,—Dr. H. H. Neumann's opinion, quoted by Sir Leonard Hill (Sept. 18, p. 573), is not consistent with the evidence. No such condition as "disuse odontoporosis" has ever been demonstrated, and there is no evidence whatever that the population is suffering from it. Teeth which fail to erupt and are

therefore completely disused have not been shown to differ in composition and structure from those which have erupted normally and have been used. Even in severe hyperparathyroidism no odontoporosis occurs. While it is known that the vigorous chewing of tough and gritty foods is generally associated with freedom from dental caries, the relationship between the two is not simplified by inventing such a concept when more credible explanations exist.

Structural defects due to nutritional, among other, causes are at least known to occur, though Lady Mellanby's assessment of them in the mouth must suffer unfortunately from the subjective nature of her test. However, the most striking and least controversial finding in the paper by Lady Mellanby and Dr. Helen Mellanby (Aug. 28, p. 409) is the accelerated improvement in caries experience in the 5-year-old school-children in 1945–7 compared with 1943–5. Unless the other influences beneficial to the teeth exerted by war conditions can be shown to have had reason to operate more powerfully in the latter period, there will be little cause to reject the view that an important part of the improvement between 1945 and 1947 was due to the fact that throughout their whole lives the children in the last group had better access to, and made more use of, a number of valuable nutrients. The opinion that these may have acted through an improvement of tooth structure is in the present state of our knowledge a reasonable one.

This does not mean that encouragement of the use of foods containing sufficient fibre to require vigorous mastication would not produce further benefit—though hardly by elimination of "odontoporosis."—I am, etc.,

London, S.E.1. M. A. Rushton.

Cervical Sympathetic Paralysis

Sir,—As Dr. J. Donaldson Craig and Mr. R. C. Fuller point out in their paper (June 19, p. 1182) on this subject, the scholarly review of Ogle (1858) should entitle him to the credit that is given to Horner; but the British, with characteristic modesty, have allowed the honour to pass elsewhere. The first description of the syndrome in man was by Edward Selleck Hare (1838), who died from typhus at the age of 26 on the day before his article appeared. The sad story has been told by Fulton (1929). John Reid (1839), of Edinburgh, is another British contributor to clinical and experimental knowledge of the syndrome. Early in this field (as in many others) was Sir James Paget (1864), whose celebrated case of causalgia with "glossy fingers"—due to a traction lesion of the brachial plexus—presented a contracted pupil on the same side.—I am, etc.,

Melbourne, Australia. Michael Kelly.

References

Fulton, J. F. (1929). *Proc. R. Soc. Med.*, **23**, 152.
Hare, E. S (1838). *Lond. med. Gaz.*, **23**, 16.
Ogle, J. W. (1858). *Med.-chir. Trans.*, **41**, 397.
Paget, J. (1864). *Med. Times Gaz.*, **1**, 331.
Reid, J. (1839). *Edinb. med. surg. J.*, **52**, 36.

Acute Porphyria

Sir,—The cases of Dr. Ernest Petrie (May 15, p. 926) and Dr. M. G. Good (Sept. 11, p. 531) illustrate the difficulty of diagnosing acute porphyria even when the diagnosis is suspected. During the last six years I have been able to study not only the patient reported with D'Silva in this *Journal*[1] but also a case of acute mania due to lead poisoning which showed intense coproporphyrinuria. This comparison and the consequent review of the literature led me to review the problems of differential diagnosis, and a summary of my conclusions may be of interest.

Every major symptom and sign of lead poisoning may occur in acute porphyria—loss of weight, hypertension, colic, encephalopathy (including coma), confusion, acute mania, and peripheral neuritis—though the nervous manifestations are usually more extreme in porphyria and may simulate an ascending myelitis. Porphyria, therefore, must be suspected in any obscure case which simulates lead poisoning. With porphyria in mind the diagnosis can be confirmed only by meticulous examination of the urine, using the hand spectroscope.

In porphyria the characteristic and diagnostic pigment is uroporphyrin, but small quantities of coproporphyrin are always present, with variable amounts of urobilin and indirubin. All these pigments may be excreted preformed, but more often they are present as colourless chromogens which must be converted to the pigment before identification is possible. The concentration of the various pigments and their chromogens fluctuates widely and independently from day to day. Indirubin, soluble in toluene, contributes most to the "port-wine colour" of the urine, while the porphyrins themselves affect the colour comparatively little, so that the same patient may on one occasion pass urine which after standing an hour or two resembles tawny port but contains a mere trace of porphyrin, and a week later urine which is only a little more brown than usual but contains relatively large amounts of porphyrin. Two cases in which the clinical manifestations were typical and the urine dark but free from porphyrin, and a third in which porphyrin could be detected only during remissions, have been reported, so that repeated examination of the urine may be necessary.

In examining the urine the essential points are the differentiation between urobilinogen and porphobilinogen, the chromogen of porphyrin, and that between uroporphyrin, characteristic of porphyria, and coproporphyrin, which occurs also in a variety of diseases including lead poisoning, hepatic cirrhosis, pellagra, and pernicious anaemia. The former is accomplished by the Watson and Schwartz test, the latter by attempting to extract the porphyrin with ether; coproporphyrin alone can be extracted with this solvent, and in porphyria it is usually present only in low concentration.

My standard procedure is therefore: (1) Place 500 ml. of urine with 20 ml. of toluene in a litre bottle and stand it in front of a window for several days, mixing occasionally. If indirubin or its chromogen are present, the urine will darken and some of the pigment will pass into the toluene layer, colouring it pink. Indirubin occurs in the urine of patients with porphyria, pellagra, and many deficiency diseases,[2] but rarely reaches a high concentration save in the first two.

(2) To 10 volumes of urine add 1 volume of concentrated hydrochloric acid and stand overnight to convert chromogens to pigments. Add sufficient sodium acetate to render the mixture just alkaline to congo-red paper, then as much again. Shake one portion five to ten times with ether, unite the ethereal extracts, and extract them with a small volume of 25% hydrochloric acid. Coproporphyrin enters the acid layer and if present in quantity colours it pink, so that the characteristic absorption bands can be seen with the spectroscope. Shake a second portion with a tenth of its volume of amyl alcohol and break the resulting emulsion by centrifuging. Transfer the amylic layer to a clean tube and add 1–5 drops of concentrated hydrochloric acid. Mix, and examine with the hand spectroscope. This extract contains both uro- and coproporphyrin.

(3) Perform the Watson and Schwartz test[3]: to 1 ml. of fresh urine add 1 ml. of Ehrlich reagent containing 2.8 g. dimethylaminobenzaldehyde per litre, and after standing a few minutes add 2–3 ml. of saturated sodium acetate. Shake with 5 ml. of chloroform. The pink colour due to urobilin is quantitatively extracted by the chloroform, that due to porphobilinogen remains in the aqueous layer.

(4) Stain a blood film with Leishman's stain, diluting with water buffered to *p*H 7.2–7.4, and examine for punctate basophilia to exclude lead poisoning.

If these tests are applied by someone skilled with the hand spectroscope there will rarely be any doubt of the diagnosis; but I must emphasize the importance of repeated examination and of referring suspicious or doubtful urines to someone experienced in this field.

Between 1942 and 1947 I served directly hospitals containing over 1,200 beds and was closely connected with others with over 1,000 beds, yet only the one case of porphyria was recognized, in spite of careful search and repeated discussions with my colleagues. I believe a few English cases have been recognized but not reported, but I conclude that the condition is probably much less common in England than in Scandinavia, the population of which is less than twice that of Greater London. Dr. Torben K. With informs me that Waldenström now thinks that the majority of Swedish cases are descended from one man who migrated to Sweden about 200 years ago.

During the last 200 years migration from Scandinavia to England has been slight, that to the United States considerable. If the genetic background needed for the manifestation of the disease were more common in Scandinavia than in England this might explain the comparative rarity in this country, while the studies of Darlington[4] on the genetic component of language, and those of Fisher and Taylor[5] and Hart,[6] suggest that the disease might be more common in Northern Ireland and in Scotland.—I am, etc.,

London, N.W.10. George Discombe.

References

1 *British Medical Journal*, 1945, **2**, 491.
2 Watson, C. J., *Proc. Soc. exp. Biol., N.Y.*, 1939, **39**, 591.
3 —— and Schwartz, S., ibid., 1941, **47**, 393.
4 *Heredity*, 1947, **1**, 269.
5 *Nature*, 1940, **145**, 590.
6 *Ann. Eugen., Camb.*, 1944, **12**, 89.

Maxillary and Mandibular Neuralgia

Sir,—In the 71st *Interim Supplement* to the *British Encyclopaedia of Medical Practice* (August, 1948), in an article on trigeminal neuralgia, Dr. Wilfred Harris has stated, "... chronic maxillary and mandibular neuralgia. This is sometimes bilateral and may be a manifestation of neuropsychosis. . . . Suggestion treatment, or even electrical convulsion therapy, is indicated." Such a statement, made by an authority of Dr. Harris's reputation, would be widely accepted if allowed to stand uncorrected.

In the differential diagnosis of trigeminal neuralgia Dr. Harris has made no mention of Costen's temporo-mandibular syndrome, although it is referred to by name on the previous page of the *Supplement*. Many cases of chronic maxillary and mandibular neuralgia are cases of Costen's syndrome, which is due to closure of the bite—that is, approximation of the mandible to the maxilla—in edentulous patients. Closure of the bite results from absence of teeth, badly constructed dentures, atrophy of the alveoli, or alveolectomy. It leads to narrowing of the temporo-mandibular joint. The strains placed upon the abnormal joint cause pain which may be unilateral or bilateral and which may be local or referred to the upper or lower jaws, eye, ear, or mastoid. Radiographic examination reveals narrowing of the joint space. The pain is relieved by fitting dentures or by building up the dentures to open up the bite. A similar syndrome may be reproduced by dentures which open up the bite too much.

These people should not be labelled as suffering from neuropsychosis. Suggestion treatment will do them no good, and electrical convulsion therapy may well do them harm.—I am, etc.,

Mt. Hawthorn, Western Australia. James H. Young.

Use and Abuse of Tonsillectomy

Sir,—Referring to recent correspondence in respect of tonsillectomy, I would like to point out that in England and Wales in 1931 the proportion of children dealt with by operation was 2.2% of average attendance in elementary schools. This figure varied in different areas from 1% to 8.5%. Comments with regard to the frequency of operation reduced the rate to 1.49% of average attendance in 1934. The figure rose to 1.97% in 1938, fell to 1.12% in 1940, and then rose again. Of recent years in this area fewer children have been submitted to operation. In my opinion enlargement *per se* is not a good ground for operation. We judge each case on its merits and satisfy ourselves that operation is in fact needed before referring cases to hospital. Despite controversy on the subject I am of the opinion that the tonsils act as barriers against bacterial infections. They may have other functions. In cases of infection and mechanical obstruction a strong case exists for tonsillectomy, but no rule-of-thumb method of assessment will give complete satisfaction. —I am, etc.,

Halifax. G. C. F. Roe, Medical Officer of Health.

Sir,—Your annotation (Sept. 18, p. 564) on the removal of children's tonsils is, I venture to say, an admirable summary of the position *qua* tonsils, but with great respect may I ask if the picture is complete unless we include the question of adenoids? All that you have said in defence of tonsils will carry weight with everyone, but that great master of children's diseases, Sir Frederic Still, used to say, "Tonsils may be left, but adenoids—never!" I can think of one case in which a parent firmly resisted the pleadings of an E.N.T. surgeon to be allowed to remove the tonsils when taking out the adenoids of a little girl. The patient, now a grown woman, has had the minimum of infections and practically never a sore throat. Any revision of our views on tonsillectomy need not lessen our readiness to remove adenoids.—I am, etc.,

Southsea, Hants. M. Aston Key.

Sir,—Your correspondence columns have recently contained many unpractical and theoretical suggestions about tonsillectomy in children with which we do not agree. But your annotation (Sept. 18, p. 564) sums up the position and follows with the most impracticable suggestions of all. The writer appears to us to have no knowledge of the present conditions in the hospitals in London. We agree that tonsillectomy is a major operation and never urgent. But surely the six months' period of observation after the patient is referred to the surgeon is totally unnecessary and undesirable. The practitioner has always spent some time considering the patient before referring him to the surgeon, and an unnecessary six months' wait is an intolerable burden for the child with a nasal obstruction caused by adenoids.

At present, with operating going on all through the year, a child at an average London hospital will have an appreciable wait before he sees the surgeon. He will then be put on the waiting list and wait anything from six to eighteen months for operation. If the operation is now not to be performed in winter or early spring and postponed when any infectious disease is prevalent the waiting time will increase by anything up to five years. Clearly in the ideal future a vast increase in the number of children's beds allotted to the ear, nose, and throat department at appropriate seasons will have to be made. In the meantime the only practical method of dealing with the problem is to keep all the beds allotted for children's tonsillectomy full all the year round. A definite statement made on the authority of the Editor of the *British Medical Journal* that children's tonsillectomy should not be done in the winter does not help in any way those who have to cope with this problem and only gives them a lot of trouble explaining to parents the necessity of operation in the winter if their child and others are ever to have the operation performed.

We agree with Dr. A. M. Tait (Sept. 11, p. 534) when he states, "Clinically I doubt if there is any more satisfactory operation in childhood than the removal of septic tonsils and adenoids." This of course implies satisfactory selection of cases, and one sees so many entirely satisfactory results of operation that the statistics showing no benefit from the operation do not represent the results of operation in cases that we see and do not unduly influence the advice we give to parents. —We are, etc.,

London, W.1. D. F. A. Neilson. G. H. Bateman.

Vaccination

Sir,—In common with many others, no doubt, I received a Ministry of Health brochure on how to vaccinate. A lot of it was interesting; but there were some parts that cannot be allowed to pass without adverse comment. In the list of names at the end to whom the compiler is indebted there was none of any woman. It asserts that the arm should be chosen as the site of election on aesthetic grounds. I think that rather more than half the populace would disagree with this. It then goes on to state that general reactions are more common from vaccinations on the leg. I would disagree. In any event they are so rare as to enable one to disregard them completely.

One last point: it is also stated that infant vaccination can be performed at clinics and health centres as safely as at home. Of the vaccination this is true, but no infant should be exposed to the great variety of infections which it is bound to meet at such an agglomeration of children.—I am, etc.,

Settle, Yorks. W. A. Hyslop.

Sir,—In Army and in civil practice both at home and abroad I have so often seen practitioners in difficulties in the vaccination of patients that I would like to draw attention to a simple solution. The rules for vaccination laid down in the Army manuals are clear enough. The skin should be purified with soap and spirit, then permitted to dry. A vertical linear scarification no more than a quarter-inch in length is made with a sterile needle above the insertion of the deltoid muscle, and any scarification which oozes blood discarded. After the lymph has been applied to the scratch an aseptic dressing should be applied, but only when the lymph has dried. So far so good. But how does the lymph get there? I have seen it blown on, wiped on, scratched on, and even applied with the blade of a penknife normally used for pipe cleaning. The last-named gentleman, however, was old enough to cast scorn on the "germ theory." In spite of the nicotine his vaccinations seemed very successful.

It has always been my practice to use a bacteriological loop, first sterilized in a flame. There is no contamination of the lymph, the dose is constant, and drying of the lymph is almost instantaneous. The resultant pustules showed practically no variation in size. In a series of 850 recruits, a little more than

half of whom bore the marks of previous vaccination, 55% of the vaccinated developed a good pustule at the first attempt and 98% of the unvaccinated. No secondary infection of the pustules was seen except in a case where a misguided house-surgeon, who cannot have attended his vaccination class, treated a normal pustule by two-hourly fomentations.—I am, etc.,

IAN STEWART,
Pathologist, Anglo-Iranian Oil Co., Ltd.
Abadan, Iran.

Resuscitation by Rocking

SIR,—I was very interested in the article by Dr. F. C. Eve and the late Dr. N. C. Forsyth (Sept. 18, p. 554) on rocking technique for resuscitation in cases of stillbirth. The same day that I read this article, while perusing the *Encyclopaedia Britannica* on quite a different quest, I found an article on drowning. This edition of the *Encyclopaedia Britannica* is dated 1896, and in this article is an account of a method ascribed to Dr. Marshall Hall, who in 1856 described a method of resuscitation in cases of stillbirth and drowning which, although it is called "imitated breathing," in actual fact by description appears to be based on rocking the patient from a reclining position on the right side to a near proneness on the ground, and returning, at some 15 rocks a minute. Although this article does not go into such detail as that of Drs. Eve and Forsyth regarding the point at which recovery commences, the general description suggests that rocking as a means of resuscitation has an honourable ancestry. It is interesting that Dr. Hall's method was supplanted by the more direct imitation of respiration used in the Silvester method. Are we now perhaps turning full circle?—I am, etc.,

V. L. KAHAN.
Oxford.

SIR,—In 1917, while still a student, I served under Dr. Frank Eve as resident medical officer at the Children's Hospital, Hull. At that time it was taught that the correct method of dealing with a case of asphyxia neonatorum was by throwing the child (still retaining a hold by the ankles) over the shoulder at intervals until the child showed signs of breathing properly.

Surely this method (in later years ridiculed by authoritative teachers) would have had the effect of rocking the cerebral blood onwards and so have produced the same result as in Dr. Eve's rocking method. He states that steep angles when rocking are presumably best, so that the old method of throwing over the shoulder could be considered as an actual improvement on Dr. Eve's method.—I am, etc.,

S. E. GOULSTINE.
South Shields.

Genu Valgum

SIR,—In reference to Mr. H. A. Brittain's article (Aug. 21, p. 385) on genu valgum, follow-up of children from birth to, say, sixteen years of age suggests that without treatment the same child at different stages may appear knock-kneed or bow-legged before finishing to all appearances normal. It also suggests that relative laxity of the lateral ligaments is usual with or without any apparent deformity.

I have also the impression that apparent genu valgum is more common in children who are going to be taller than average, and the reverse appearance in the more stocky type. Could it not be that the condition is due (in some cases) to a faulty correlation in time between the alteration in the tibio-femoral angle from infantile to adult and the alteration in the femoral-neck angle, with relative broadening of the pelvis, which takes place during the same period?—I am, etc.,

H. A. LAVELLE.
Derby.

Purpura Complicating Scarlet Fever

SIR,—I should like to add one point to those mentioned by Drs. T. Anderson, M. S. Ferguson, and J. B. Landsman in their paper on purpura fulminans complicating scarlet fever (Sept. 18, p. 549). Besides the purpura occurring eleven days after scarlatina their case showed gastro-intestinal symptoms (haematemesis, colic, melaena), joint symptoms (painful swellings of the joints), and nephritis (haematuria, cylindruria). In these respects their case resembles several of the previously reported cases of post-scarlatinal purpura, from which it is clear that post-scarlatinal purpura is a particular example of the Schönlein-Henoch syndrome (anaphylactoid purpura).

The interest of cases such as that reported is that they illustrate clearly the fact that aetiologically the Schönlein-Henoch syndrome belongs to that family of diseases which includes acute nephritis and rheumatic fever and which is characterized by the relation of these diseases to a preceding streptococcal infection.—I am, etc.,

DOUGLAS GAIRDNER.
Cambridge.

Reactions to Intravenous Sclerotics

SIR,—With reference to Dr. C. E. Taylor's letter (Sept. 18, p. 573) describing two cases of allergy to the use of sodium morrhuate as an intravenous sclerosant, I am surprised that this substance is still being used having regard to the large number of cases on record of allergic responses ranging from urticaria to death. Monoethanolamine oleate has long been recognized as a safe substitute for sodium morrhuate and is bacteriostatic. It is marketed under several trade names. Rowden Foote[1] discusses this angle very thoroughly in his book on the subject, and refers to the writings of Mr. Harold Dodd, who in 1940 stated that sodium morrhuate was potentially dangerous as well as being an inefficient sclerosant. I feel that the views of these two authorities cannot be too widely known.—I am, etc.,

R. E. SIDEBOTHAM.
Ottery St. Mary, Devon.

REFERENCE

1 *Varicose Veins, Haemorrhoids, and Other Conditions—Their Treatment by Injection*, 1944. London.

Transfusion and Haemolytic Disease

SIR,—In their paper on transfusion as a cause of haemolytic disease Drs. George Discombe and H. O. Hughes (Aug. 14, p. 329) state that a history of transfusion without Rh testing is 18 times more common among mothers of infants suffering from haemolytic disease of the newborn than among unselected patients at an antenatal clinic.

It may put the matter into perspective if we calculate the chances of an untransfused mother having an infant with this disease as against those of a transfused mother. On the figures given in the article 36% of mothers of infants with the disease had been transfused, while only 2% of a random sample of clinic mothers had been transfused.

Assuming that x% of transfused mothers and y% of untransfused mothers have infants suffering from the disease, we get 36 such infants from $\frac{36\times100}{x}$ transfused mothers at risk, and 64 such infants from $\frac{64\times100}{y}$ untransfused mothers at risk. As 2% of mothers attending the clinic have been transfused and 98% have not, $\frac{3,600}{x}=\frac{2}{98}\times\frac{6,400}{y}$ and therefore $x=27.56$ y. That is, a woman's chance of having an infant suffering from haemolytic disease of the newborn is more than 27 times increased by having a blood transfusion first, if not Rh-matched for her before administration.

If the statistics given by the authors can be accepted as representative, which I see no reason to doubt, Drs. Discombe and Hughes have drawn attention to a risk which most doctors have not until now realized and which we should certainly not forget.—I am, etc.,

H. S. RUSSELL.
Shipley, Yorks.

Poisoning by Berries

SIR,—Reports of poisoning by berries are becoming alarmingly frequent. The following two cases show how vital it is that the public at large should be made aware of the danger, as this knowledge may make all the difference to the result.

A boy aged 6 years told his mother on returning home that he had been eating berries. The mother, fortunately understanding the grave possibilities, immediately called in her family doctor, who brought the child to hospital. On admission there were no symptoms or signs of poisoning. The stomach was washed out, and in the stomach washings berry residues were found. The patient was further given an emetic and a saline purge.

The child then stated that a little girl had been with him and had also eaten berries. She was traced and brought to hospital about one hour later. She too was symptomless, but many berries were found in the stomach washings. By retracing the route taken by the children, a bush covered in woody nightshade was found. The berries on this bush were identified with those found in the stomach washings. The two children were observed for 48 hours in hospital, but developed no untoward symptoms. It is obvious that only prompt action by the boy's mother and by the family doctor prevented a very serious accident.

As the symptoms of poisoning by woody nightshade are those of paralysis of the respiratory muscles, it would seem that a mechanical respirator may afford the most rational line of treatment in tiding them over the stage of respiratory paralysis.—I am, etc.,

London, N.21. P. R. Davis.

Rhabdomyosarcoma of the Urinary Bladder

Sir,—The striking characters of the tumour described by Mr. Claude Vipond in your issue of Sept. 18 (p. 551) prompt me to add a further detail from the necropsy report of the case.

The growth appeared to have invaded the bladder from the outside and had ulcerated through its posterior wall; sections from this region supported this observation. The prostate gland was not identified in the tumour, whose anatomical relations were necessarily disturbed by its great size.

I understand Mr. Vipond returned to Canada some time before this article was published.—I am, etc.,

Dudley. A. G. Marshall.

Empirical Methods

Sir,—Now that the difficult cases which once gave zest to a country doctor's life are passing more and more out of his hands it might be a boon to find some fresh interest that would redeem him from the life of an obedient clerk. May one not unfamiliar with the laboratory offer a gleam of hope? I suggest that a harvest lies waiting for people with the faith and judgment to collect, sift, and co-ordinate empirical methods of treatment—unknown to and despised by rational scientists—methods driven by ridicule from orthodox practice; for, without minimizing in the least the good that organized science has done and will do for the sick, we are surely beginning to doubt the Victorian doctrine of its all-sufficiency. In medicine as in other walks of life two other legs of the tripod still have their uses—namely, direct empirical knowledge handed down by custom, and one's individual experience and clinical sense. Everyone knows that the three in balanced combination are a safer support than any one taken alone.

Be that as it may, one cannot fail to observe unpleasant side-effects of an undiluted rationalism: (1) the growing complexity of accumulated and sometimes irrelevant facts, the memorizing of which robs young novices of health and recreation; (2) the mounting expense of analyses applied indiscriminately to the public at large; (3) that while rational medicine sheds healing light on some disorders it leaves the treatment of others in blacker darkness than before, particularly the residue which the G.P. has to deal with once the "interesting" cases have gone elsewhere; (4) the authoritarian view that it is more respectable to try remedies that "ought" to work but do not than those which ought not to work but do; (5) a lowered prestige of the profession in the eyes of pharmacists, who notice our lost inventiveness and lost elegance in composing and handling simple medicines.

Illnesses have vexed mankind since the Garden of Eden, and unless the experience of the ages counts for nothing beside that of this century I make bold to suggest that a fraternity of hand-picked doctors on the lines of a mediaeval guild and unhampered by official control could do the profession a good turn by testing and reassessing remedies and customs, tips and wrinkles, which have died out either with their humble orginators or with the school that bred them. If some direct and simple but forgotten remedy can heal, *cito, tute* and *jucunde*, why not resurrect it and leave the underlying reason to be worked out by science at leisure?—I am, etc.,

Wellington, Salop. A. R. McClure.

Comprehensive Child Health Service

Sir,—Reference the letters which have appeared in the *Journal* under this heading, the following conditions are required for a complete child health service: (*a*) team work, (*b*) a recording system giving each child a complete dossier, (*c*) the new health centre. No doctor can deal single-handed with child health in all its aspects, but the family doctor must be the central figure in the scheme, and it will be through him that the various measures can be co-ordinated and through him that the full co-operation of the parent is obtained. Child health begins in the antenatal period, and preventive measures are continued in the child-welfare and school clinics. It is essential to have the full support of the family doctor in this preventive work. The prevention of T.B., infectious diseases, rickets, rheumatism, and nutritional and mental conditions will require attention.

Physical defects occurring during this period and requiring curative treatment must be dealt with by the family doctor and/or specialist. The team required therefore is the family doctor, M.O.s of the preventive clinics, and the specialists. The child's dossier will include all records of the various members of the team and give details of the preventive and curative measures taken from the antenatal period onwards. These records will be available to each member of the team.

To develop such a scheme to the full implies the development of the new health centre, where all clinics and consultations come under the one roof and the records are available as required. I emphasize that the family doctor must be the central pivot of the scheme. He is in direct touch with the parents and in their confidence, and it is he who will advise on the preventive and curative measures in the health of the child.—I am, etc.,

Southport, Lancs. S. T. Beggs.

POINTS FROM LETTERS

Traumatic Amputation

Dr. E. Protheroe Smith (Crediton, Devon) writes: The medical memorandum by Dr. J. D. C. Millar (Sept. 18, p. 559) reminds me of what must be a very rare accident. A man's clothing was caught in some machinery he was working on, and he was swung round the shaft till he fell dead. On arrival shortly afterwards I found his left leg completely torn off and the left side of the pelvis had gone with it, separation having taken place at the pubic and sacro-iliac articulations. I do not remember (after 25 years) at what level the nerves and vessels were torn, but the ureter was torn, both ends being seen, the upper still dripping urine. The amazing thing was that the peritoneum remained intact and clean of fasciae and muscles, and the contents (bowels and bladder) could be easily seen through it.

Fibrositis and the Weather

Squadron Leader A. T. Ryland (R.A.F., St. Athan, Glamorgan) writes: Dr. G. C. Pether points out in his letter (Sept. 18, p. 573) that fibrositis is a very real affliction to those who suffer from it, and he suggests that "weather pains" are not directly due to changes of humidity, pressure, or temperature. Anyone with access to a hygrometer, barometer, or thermometer can verify that patients can predict weather changes before these instruments vary their readings. Also there is no need to experiment with artificial climates. Going from a dry, cold room into a warm, steamy bathroom, going up or down stairs (or better still climbing a hill), and going from a warm room to a cold one, will produce the respective changes required and will be found to have no effect. Nor does the old "let-out"—"If you can't explain it, blame it on electricity"—work in this case. The difference of potential between different levels of the air is a very variable quantity and is liable to sudden changes, as during rain. These changes are not reproduced in the patient.

In spite of these difficulties I have been able to find a connexion between these pains and the weather. A meteorologist, by drawing a weather map, can tell you that to-morrow a warm front will pass and you will feel warm. In the same way, by inspection of a weather map, I can predict the onset of "weather pains." But in spite of that I have not the slightest idea how the influence is transmitted from the approaching weather to the patient. I can make only the weak suggestion that, like homing pigeons, some human bodies may possess an extra sense over and above the normal six which makes them susceptible to meteorological influences. There is an interesting field for research here.

Obituary

Dr. Francis Keene Marriott died on Aug. 30 at the early age of 55 after an illness of several months' duration. At times he suffered attacks of most intense pain which he bore with great fortitude, and to the very last he hoped to be able to continue some of his work. He was educated at Gresham's School and trained at the London Hospital, qualifying in 1915. He served in the first world war in the R.A.M.C., and was awarded the Military Cross for conspicuous bravery and devotion to duty. On his release from the Army he did several house appointments and then took up practice in Yoxford. Dr. Marriott had an extensive rural practice, and was a general practitioner of the finest type. Soon he was deeply concerned with parochial affairs, and he was elected chairman of the parish council and its representative on the Blyth R.D.C. He was president of the British Legion and village club and a great supporter of the cricket and football clubs. Last year he became chairman of the Clinical Society of Ipswich. He had taken an active part in B.M.A. work, and was elected chairman of the East Suffolk Division in 1938. He was always a wise and keen member of the East Suffolk Panel Committee, which he represented on the county council and recently at the Panel Conference in London. During the second world war he served as a major in the Home Guard and spent a lot of time teaching first aid in the Yoxford area. He also carried on the practice of an absent colleague, and was very overworked. As a physician at the Patrick Stead Hospital, Halesworth, he was especially interested in obstetrics. It was a bitter blow to him when it became necessary to leave his home with its beautiful park and garden in which he had spent so many happy hours with his wife and two daughters. He loved country life, and when he could spare the time shot and rode with the best. Dr. Marriott was buried in Yoxford, where he had worked so hard and efficiently for twenty-seven years. The large parish church was filled to capacity, and sitting among the crowd I felt how very worth while such a doctor's life had been.—D. W. B.

Medical Notes in Parliament

Hospitals Endowment Fund

Sir John Mellor on Sept. 21 moved that the regulations entitled the National Health Service (Control and Management of Hospitals Endowment Fund) Regulations, 1948, be annulled. These Regulations provided for control and management of the Hospitals Endowment Fund set up under the National Health Service Act, 1946. The fund amounted to something like £15,000,000, and represented donations made in the past to the voluntary hospitals. The Act of 1946 largely defeated the intentions of those benefactors, but the House had a duty to see the fund was well administered. The Regulations entrusted to the National Debt Commissioners the management of the funds invested. The Minister was entitled under the Act to make this provision, but had exercised his discretion in a misguided manner. He called attention to the use by the National Debt Commissioners of money belonging to the Unemployment Fund, and contended that the Commissioners had used this money to influence the stock market to accord with Government financial policy. He contended that this fund should be beyond the reach of Treasury control. Possibly the public trustee would be an appropriate person to take over the duty of administration.

Mr. David Renton seconded the motion. He said the sum of £15,000,000 mentioned was a disappointment because Mr. Bevan on the Second Reading of the Bill had said that something like £32,000,000 belonging to voluntary hospitals was to be used as a shock absorber between the Treasury, the Government, and the hospital administration. The House should be given some idea whether and how regional hospital boards would get their share of the fund, as Mr. Bevan had promised during the committee stage of the Bill. When Mr. Bevan had obtained the funds, members assumed that they would be used solely for the benefit of the hospitals. He suggested it would be better if the funds were kept in a pool where they would be entirely free from use by the Chancellor of the Exchequer, who might feel tempted to bolster up his financial policy.

Mr. Glenvil Hall said the Act laid down that voluntary non-teaching hospitals should transfer to the Minister the funds at their disposal. These securities were in process of being transferred, and it was the Minister's duty to put them into an endowment fund. The Minister had received £17,750,000, and a good deal more was to come, although he could not say how much. The securities would be held in the name of the Minister of Health and not by the Treasury. Investments other than Government securities would gradually be transferred into Government stocks. The Government had not used the Unemployment Fund to bolster up a cheap money policy, and the charge made by Sir John Mellor was completely false.

Mr. Assheton said the fund had been set aside to benefit the hospitals, and there might be occasions when the interests of the hospitals and of the Treasury and National Debt Commissioners might not be identical. Some other funds had been invested in securities the value of which had fallen by 20%. There might well be a permanent loss to those funds. The Opposition was trying to safeguard the Treasury and the Ministry of Health from making a similar mistake in regard to the Hospital Endowment Fund.

Sir John Mellor's motion was defeated by 183 to 40.

National Health Service

Sir Henry Morris-Jones was told by Mr. Bevan on Sept. 23 that over 90% of the total civilian population were on the lists of doctors engaged in the National Health Service. Available figures might involve some duplication which could not yet be exactly estimated. The number of people who had not applied to go on doctors' lists was, subject to elimination of duplicates, fewer than 4,000,000 for England and Wales. The number who had asked for their names to be removed was not known.

Mr. Bevan confirmed that regulations entitle foreign nationals on a short visit to Great Britain to full benefit under the National Health Service, including the replacement of dentures or spectacles. He added that the cost of treating aliens could not be estimated but was likely to be small.

Mr. Bevan also indicated, in reply to a later question, that he knew of the delay to thousands of persons in receiving optical benefits. As anticipated, heavy initial demands were resulting in temporary delays, but increased production should soon close the gap. Persons entitled to the provision of free spectacle lenses under the National Health Service Act, 1946, were permitted to have these lenses fitted to spectacle frames already owned by them.

Capitation Fee.—Commander Noble asked on Sept. 23 what capitation fee was to be paid to general practitioners under the National Health Service. Mr. Bevan replied that there was a total fund of 18s. multiplied by 95% of the civil population. This was divided into local funds, on a basis agreed with the profession. Doctors shared it according to the people on their lists.

Dental Estimates.—On Sept. 23 Sir Ernest Graham-Little asked what was the cost to date of dental estimates submitted or approved by the Dental Estimates Board. Mr. Bevan replied that the Board had authorized payment of a total of £708,307 up to Sept. 17. There was no excess over the sums already voted by Parliament for the purpose.

Cost of Prescriptions.—The estimated cost of prescriptions dispensed from July 5 to Aug. 5 was nearly £1,500,000. The amount paid from July 5 to Aug. 31 (for which period alone figures are available) for sight-testing and supplying glasses under the supplementary ophthalmic service was £237,433, though this figure did not represent the full liabilities incurred during the period. This information was supplied by Mr. Bevan to Sir Henry Morris-Jones on Sept. 23.

Tons of Paper.—There have been distributed 13,200,000 copies of a leaflet on the National Health Service costing £4,350 and requiring 46 tons of paper. As regards the National Insurance Scheme 40,400,000 leaflets, including the family guide, were made available for distribution, costing £54,000 and requiring 424 tons of paper.

A.I.D. under N.H.S.—On Sept. 23 Mr. Driberg asked what facilities for artificial insemination were provided at clinics under the National Health Service; if such facilities included both A.I.(H.) and A.I.(D.); what information had been received from such clinics regarding the physical and mental health and development of children born as a result of artificial insemination, and if Mr. Bevan would make inquiries on this subject from private clinics. Mr. Bevan answered that no such facilities were provided. On the last part of the question he was not advised that such an inquiry would be justified.

Medico-Legal

SILICOSIS NOT AN ACCIDENT

[From Our Medico-Legal Correspondent]

The tendency of the House of Lords to interpret the Workmen's Compensation Acts "beneficially" has led to a number of decisions which have expanded the concept of injury by accident to an extent which puts a severe strain on both the imagination and the semantic sense of the ordinary person. In recent years this section of the *Journal* has contained some account of cases in which compensation was awarded to a workman who had contracted Raynaud's disease from the vibration of a rotary tool,[1] and to another who suffered from hernia as a result of the vibration of a pneumatic drill.[2] The classical case on which these were based was that of a girl[3] who, after sustaining numerous cuts and scratches on her hands in the course of her work over a long period, ultimately became totally incapacitated as a result of blood poisoning. It was held that she was not the less entitled to compensation because her disease was due not to one specific and definite accident but to a series of accidents, each one of which was specific and ascertainable though its actual influence on the resulting illness could not be precisely fixed. The House of Lords seems now to have called a halt to this process.

A workman[4] contracted silicosis through prolonged work as a slate cutter. Because slate does not contain 50% of silica he could not benefit from the Silicosis Scheme. He therefore claimed for compensation for an injury by accident, arguing, as the former applicants had, that each particle of silica had caused a separate accident and that his condition was the result of the accumulation of these infinitesimal injuries. The House of Lords decided against him. The decision was doubtless influenced by the earlier case of *Williams* v. *Guest*, etc.,[5] in which a claim based on silicosis was rejected by the Court of Appeal on the ground that the illness was not due to an accident as that word is used in the Act, or to a series of accidents, but was the result of a continuing process repeated from day to day. Lord Porter admitted that two types of cases had in the past not been sufficiently differentiated—those in which a single accident is followed by a resultant injury, as in the "anthrax" case,[6] in which the entrance of an anthrax bacillus was the "accident"; and those in which, as in the case of the girl with the cut hands, there was a series of specific and ascertainable accidents followed by an injury which might be the consequence of any or all of them. Although it was possible to analyse silicosis into a series of separate injuries caused by separate accidents, the attribution of the disease to an accidental cause was, he said, unreal. The distinction between accident and disease had been insisted on throughout the authorities and was well founded. No explicit formula could be adopted with safety, but there must come a time when the indefinite number of so-called accidents and the length of time over which they occurred took away the element of accident and substituted that of process. In his opinion, disability from silicosis was one of such instances, and could not be said to be the result of injury by accident. Lord Simonds, who also gave an opinion, quoted words recently used by Viscount Caldecote of three cases in which the workman failed because "the facts were such as to make it impossible to identify any event which could, however loosely, be called an accident"; and also Lord Romer's question, "Was there a physiological change for the worse in the respondent's condition on a particular occasion while he was at work?" He considered that the case of the girl with the scratched hands was the high-water mark (of the doctrine of cumulative injury by infinitesimal accident). Lord du Parcq added that the duty of construing an Act of Parliament was not to be performed by deducing from dicta contained in earlier judgments principles which might seem to follow from them.

[1] *Fitzsimons* v. *Ford Motor Co.*, 1946, 2 All E.R. 429.
[2] *Hughes* v. *Lancaster Steam Coal Collieries*, 1947, 2 All E.R. 556; *British Medical Journal*, 1948, 1, 711.
[3] *Burrell* v. *Selvage*, 1921, 1 K.B. 355.
[4] *Roberts* v. *Dorothea Slate Quarries*, 1948, 2 All E.R. 201.
[5] 1926 1 K.B. 497.
[6] *Brintons* v. *Turvey*, 1905, A.C. 230.

Medical News

Medical Photography

There will be an informal display of medical photographic apparatus and records at the Department of Medical Photography, Westminster Hospital Medical School, 17, Horseferry Road, London, S.W.1, from Oct. 5 to 9 inclusive (10 a.m. to 4 p.m.). Series of photographs will show the recording of complete case histories of dermatological conditions.

Chartered Society of Physiotherapy

Mr. Walter R. Owen, chairman of the London County Council, proposed the toast of the Society at a luncheon on Sept. 24. He recalled the many activities of the physiotherapists since the time—about fifty years ago—when they were popularly known as rubbers and spankers, and paid tribute to their enlightened policy, especially in the field of education. The L.C.C. was very appreciative of the Society's endeavours. Dr. W. S. C. Copeman, chairman of council of the Society, spoke of its future and suggested that, though temporary dilution of its ranks might be necessary owing to the shortage of physiotherapists, they must make sure that it was only temporary. The Society had offered to open a supplementary register and wished it to be officially recognized. He hoped for an answer from the Ministry of Health in the not-too-distant future. Lord Horder, president of the Society, welcomed the guests and particularly the delegates from fifteen countries overseas. This meeting perhaps foreshadowed things to come—possibly an international body of physiotherapists. Dr. C. E. Thackray Parsons, deputy master of the Worshipful Society of Apothecaries, said that, when he remembered in his youth the many people crippled with arthritis and other conditions and compared their treatment then with that given to-day, he realized how much they owed to the physiotherapists.

Hospital Admissions and Records

A report entitled "Some Observations on Hospital Admissions and Records" published under the auspices of King Edward's Hospital Fund (London: George Barber, 1s.) emphasizes the advantages of having an appointment system at hospitals. A group of administrative officers studied the arrangements at eight hospitals on a short course established by the Fund and found that an efficient appointment system saves space and prevents overcrowded clinics. The best system is for all out-patients (except at certain special clinics—for example, V.D.) to have an appointment arranged by either the doctor or the patient unless referred from the casualty department; the patient must bring a doctor's letter or a note from casualty. The report advocates a central office for dealing with appointments, which should be allotted in half-hourly or hourly blocks. Normally not more than 15 minutes should elapse before the patient is due to see the doctor. Cases suitable for teaching may be sorted out by the appointment clerks, who are informed by the consultants of their requirements. The out-patient department should provide only consultations and special treatment which cannot be given by the general practitioner; cases that can be treated by the general practitioner may nevertheless be used for teaching purposes in casualty. A senior R.M.O. should be in charge of admission waiting-lists, since he can "borrow" beds and the arrangements are therefore more elastic. The unit system of keeping notes—one number for ever, one folder, and one central index—was found to be the most efficient. Messengers must carry the notes from one department to another so that the patients shall not read them. Every hospital should have a records committee and an experienced records officer in charge.

Smoke Abatement

Lord Simon of Wythenshawe has been elected President of the National Smoke Abatement Society. The retiring President, Sir George Elliston, chairman of the Public Health Committee of the City of London Common Council, delivered his final presidential address on Sept. 30 at the annual conference of the Society at Cheltenham, which was attended by over 400 delegates from local authorities and technical organizations.

Insurance Agreement with New Zealand

A reciprocal agreement has been made between Britain and New Zealand covering the Government issue of family allowances in the two countries, so that tests of residence will be waived for families coming from the other country. Under the New Zealand scheme 10s. a week is paid for every child, including the first.

International Orthopaedic Surgery

At the fourth congress of the Société Internationale de Chirurgie Orthopédique et de Traumatologie held in Amsterdam from Sept. 13 to 18 the following officers were elected: President of the Society—Sir Harry Platt; vice-presidents—Dr. San Ricart (Barcelona) and Professor E. Sorrel (Paris). The next congress will be held in May, 1951, at Stockholm with Professor Richard Scherb, of Zurich, as president of the congress.

Royal Sanitary Institute

Sir Weldon Dalrymple-Champneys, Bt., will take office as Chairman of the Council of the Royal Sanitary Institute on Oct. 1.

American College of Radiology

Dr. Russell Reynolds has been elected an honorary fellow of the American College of Radiology.

COMING EVENTS

British Congress of Obstetrics and Gynaecology

The twelfth British Congress of Obstetrics and Gynaecology will be held at Friends House, Euston Road, London, N.W., on Wednesday, Thursday, and Friday, July 6, 7, and 8, 1949, under the presidency of Sir Eardley Holland. The Minister of Health will declare the Congress open at 10 a.m. on July 6, and a discussion, to be introduced by Mr. C. McIntosh Marshall (Liverpool), on "Modern Caesarean Section" will follow. At 2 p.m. a paper will be read by Dr. Joe Meigs (Massachusetts), followed by a discussion on "Pregnanediol," to be introduced by Professor G. F. Marrian, D.Sc., F.R.S. (Edinburgh), and Dr. G. I. M. Swyer (London). On July 7, at 10 a.m., Professor G. W. Pickering and Professor F. J. Browne (London) will introduce a discussion on "Essential Hypertension in Pregnancy." At 2 p.m. discussions on "Hernia of Pouch of Douglas" and "The Management of Pregnancy in Diabetics" will be introduced by Mr. C. D. Read (London), and by Mr. J. H. Peel (London) and Professor D. M. Dunlop (Edinburgh) respectively. On July 8, at 10 a.m., Dr. J. E. Ayre (Montreal) and Dr. F. G. Spear (Cambridge) will introduce a discussion on "Diagnosis and Prognosis of Carcinoma of the Uterus." At 2 p.m. there will be a discussion on "Maternal Mortality." The honorary secretaries of the Congress are Mr. A. Joseph Wrigley, M.D., F.R.C.S., and Mr. Ian M. Jackson, F.R.C.S., and the names of those who hope to attend the Congress should reach them by March 31, 1949, at the latest, at the Royal College of Obstetricians and Gynaecologists, 58, Queen Anne Street, London, W.1.

Chadwick Public Lectures

The Chadwick Trust (204, Abbey House, Westminster, London, S.W.1) announces the following public lectures: Thursday, Oct. 7, 8.30 p.m., at the Reception Room of the University of Bristol, Mr. A. Briggs, "The Public Health Act of 1848: a Forgotten Centenary"; Thursday, Oct. 28, 4 p.m., at University College, University Park, Nottingham, Sir Arthur McNalty, "Advances in Preventive Medicine During the War of 1939–45"; Tuesday, Nov. 2, 2.30 p.m., at Sir Edward Meyerstein Lecture Theatre, Westminster Hospital Medical School, 17, Horseferry Road, Westminster, London, S.W.1, Dr. Wyndham E. B. Lloyd, "The Prevention of Tuberculosis, with Special Reference to Environment"; Tuesday, Nov. 23, 2.30 p.m., at Royal Sanitary Institute, 90, Buckingham Palace Road, London, S.W.1, Bossom Gift Lecture by Mr. Alister MacDonald, "The Influence of Hygiene on the Shape of Buildings"; Thursday, Dec. 2, 4.30 p.m., at St. Mary's Hospital Medical School, Norfolk Place, Praed Street, Paddington, W.2, Malcolm Morris Memorial Lecture by Dr. C. Seeley, "Preventive Medicine and Clinical Medicine in Relation to the Public Health"; Tuesday, Dec. 14, 2.30 p.m., at Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, London, W.1, Mr. S. E. Finer, "The Rise and Fall of the First General Board of Health." Admission to the lectures is free, without ticket.

International Scientific Film Congress

In connexion with the International Scientific Film Congress to be held in London from Oct. 8 to 12, the Scientific Film Association has arranged three morning meetings for viewing and discussing medical films, on Friday, Oct. 8, at the Royal Society of Medicine (1, Wimpole Street, W.) with Sir Kenneth Goadby in the chair; on Saturday, Oct. 9, at Simpl, Ltd., 1-4, Lambeth High Street, London, S.E., with Dr. Ronald MacKeith in the chair; and on Monday, Oct. 11, at Royal Society of Medicine, with Dr. E. Goodwin Rawlinson in the chair. Medical practitioners and others in possession of medical and biological films which they are willing to send or bring to these meetings are asked to send details to the organizer of the Specialist Medical Sessions of the Congress at 34, Soho Square, London, W.1. Applications for admission to the meetings, which is free, should be made to the same address.

National Hospital

The inaugural address will be given by Dr. Gordon Holmes, F.R.S., to open the academic year 1948–9, at the National Hospital, Queen Square, Institute of Neurology, London, W.C., on Oct. 4, at 5 p.m. His subject is "Incoordination of Movement."

Pharmaceutical Society of Great Britain

The opening of the 107th session of the Pharmaceutical Society of Great Britain and the presentation of prizes will take place at 17, Bloomsbury Square, London, W.C., on Wednesday, Oct. 6, at 3 p.m., when Mr. Thomas Tickle will deliver the inaugural address.

Annual Dinner of Officers of R.A.F. Medical Branch

The annual dinner of officers of the Royal Air Force Medical Branch will be held at the Dorchester Hotel, London, W., on Friday, Oct. 8. The price of tickets (the number is limited) is £2 10s. inclusive. Former officers who wish to attend the dinner should make early application to Squadron-Leader J. W. Garraway, Air Ministry M.A.1, Awdry House, Kingsway, London, W.C.2.

London County Medical Society

The London County Medical Society will hold a meeting at Friends House, Euston Road, London, N.W.1, on Oct. 7, at 3.45 p.m. A discussion on "Nutrition in Hospitals" will be opened by Dr. Magnus Pyke, D.Sc., to be followed by Miss Simmons, dietitian of Hammersmith Hospital.

Royal Dental Hospital of London

The prize distribution and Conversazione of the Royal Dental Hospital of London School of Dental Surgery (University of London) will be held at the Royal Dental Hospital, 32, Leicester Square, W.C., on Saturday, Oct. 9, at 3 p.m.

Royal Photographic Society

The second part of the 93rd annual exhibition of the Royal Photographic Society of Great Britain will be held at 16, Princes Gate, London, S.W., from Oct. 9 to 30 inclusive, and will include a number of exhibits of special interest to the medical profession.

SOCIETIES AND LECTURES

Tuesday

Institute of Dermatology, 5, Lisle Street, Leicester Square, London, W.C.—Oct. 5, 5 p.m. *"The Dermatoses of Childhood,"* by Dr. R. T. Brain.

Society of Chemical Industry: Fine Chemicals Group.—At Royal Institution, Albemarle Street, London, W., Oct. 5, 7 p.m. *"Fine Chemicals for Medical Use,"* by Professor J. H. Burn.

Wednesday

Glasgow University: Department of Ophthalmology.—Oct. 6, 8 p.m. *"Physiotherapy of the Eye,"* by Mr. F. W. Law.

Thursday

Chadwick Trust.—At Reception Room, Bristol University, Oct. 7, 8.30 p.m. *"The Public Health Act of 1848: a Forgotten Centenary,"* by Mr. A. Briggs.

Faculty of Homoeopathy.—At London Homoeopathic Hospital, Oct. 7, 5 p.m. *"The Three Constitutions,"* by Dr. Leon Vannier (Paris).

Institute of Dermatology, 5, Lisle Street, Leicester Square, London, W.C.—Oct. 7, 5 p.m. *"Modern Trends in Dermatology,"* by Dr. R. M. B. MacKenna.

Royal Sanitary Institute.—At Ambulance Hall, St. James', Pontypool, Mon., Oct. 7, 10 a.m. *"Health and its New Aspects,"* by Dr. A. S. Jarman; *"Food Hygiene,"* by Mr. F. G. Meek.

Society and Clinic for Constructive Birth Control and Racial Progress.—At Mothers' Clinic, 108, Whitfield Street, London, W., Oct. 7, 2.30 p.m. *A doctors' demonstration of contraceptive technique,* by Drs. Marie C. Stopes and Beddow Bayly.

Saturday

Royal Dental Hospital of London School of Dental Surgery (University of London).—Oct. 9, 3 p.m. Prize distribution and Conversazione at the hospital. Sir Walter Monckton will present the prizes.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Bird.—On Aug. 31, 1948, at Trafalgar House, Burnley, to Renee, wife of Dr. George Bird, a son—Richard Edward.

MacLeod.—On Sept. 21, 1948, at Clevedon, Somerset, to Noreen, wife of Dr. Alastair MacLeod, a daughter.

Martin-Scott.—On Sept. 18, 1948, at The Old Farm Maternity Home, Temple Sheen, S.W., to Nancy (née Pepper), wife of Dr. Ian Martin-Scott, a son.

Oliver.—On Sept. 20, 1948, at Annandale Nursing Home, to Helen Taylor, wife of Dr. R. M. Oliver, a daughter.

Pearce.—On Sept. 15, 1948, at Nuffield House, London, S.E., to Margaret (née Gibson), wife of Dr. Richard Pearce, a daughter.

Salmond.—On Sept. 12, 1948, to Elsa, wife of Dr. J. Readdie Salmond, Lindores, Appleby Magna, Leicestershire, a daughter—Madeline Rosamund.

DEATHS

Boulton.—On Sept. 19, 1948, Norman John Boulton, M.R.C.S., L.R.C.P., of Kintbury, Berkshire, aged 45.

Cantillon.—On Sept. 6, 1948, Edwin Vincent Cantillon, of Rose Lodge, Blackrock, Cork.

Gibson.—On Sept. 16, 1948, Harold Edward Gibson, M.D., of Upcott, Old Beer Road, Seaton, Devon, late of South Godstone, Surrey.

Henry.—On Sept. 17, 1948, John Rea Henry, M.B., B.Ch., B.A.O., of The Limes, Blaby, Leicestershire, aged 64.

Walker-Lindsay.—On Sept. 19, 1948, Edythe Marjorie Stewart Walker-Lindsay, M.B., Ch.B.Glas., of Pitchfield Cottage, Thursley, Surrey, formerly of Aldershot.

No. 37

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Sept. 11.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1948					1947 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	26	2	13	2	2	25	—	26	1	2
Deaths		—	—				—	—		
Diphtheria	136	15	60	5	3	162	11	48	10	6
Deaths	1	—	—	—	—	1	—	—	—	1
Dysentery	84	12	53	—	—	69	6	17	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	2	—	—	—	—	—	—	—	—	—
Deaths		—					—			
Erysipelas			27	9	2			23	6	—
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				46					120	
Deaths	26	2	14	2	1	80	4	24	9	3
Measles*	2,608	88	35	28	34	1,038	36	51	113	6
Deaths†			—	—	—	1	—	—	2	—
Ophthalmia neonatorum	53	2	9	—	—	63	7	5	1	—
Deaths										
Paratyphoid fever	32	2	3 (B)	—	—	14	1	1 (A)	—	—
								1 (B)		
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	261	11	—	2	2	203	15	1	2	2
Deaths (from influenza)‡	3	—	1	—	—	4	2	—	—	—
Pneumonia, primary			121	14				142	20	
Deaths	130	21		8	4		15		13	9
Polio-encephalitis, acute	4	1				42	3			
Deaths							—			
Poliomyelitis, acute	72	7	3	2	—	572	63	155	11	12
Deaths§	3	—					2			
Puerperal fever		—	10		—		2	19		—
Deaths										
Puerperal pyrexia‖	79	10	12	—	—	124	7	9	—	2
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	833	61	197	55	29	674	54	157	25	28
Deaths†			—	—	—	1	—	—	1	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	28	1	13	2	1	13	1	4	1	4
Deaths	—	—	—	—	—	—	—	—	—	2
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	2,877	229	110	58	11	1,519	145	67	78	8
Deaths	10	1	—	—	—	6	—	1	1	—
Deaths (0–1 year)	260	32	52	26	10	316	37	63	31	17
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,840	578	527	177	108	3,678	558	490	134	123
Annual death rate (per 1,000 persons living)			10·6	11·1				10·2	8·5	
Live births	7,565	1157	834	450	207	8,266	1279	949	447	242
Annual rate per 1,000 persons living			16·8	28·1				19·1	28·2	
Stillbirths	185	25	33			210	24	26		
Rate per 1,000 total births (including stillborn)			38					27		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales and Eire.

EPIDEMIOLOGICAL NOTES

Poliomyelitis in the United States

An incidence in the United States of 983 cases of poliomyelitis for the week ended July 24 exceeded by 315 that for the corresponding week of 1946—the year of second highest prevalence (25,191 cases) in the country's poliomyelitis history. It was also the largest number reported for a corresponding week in the five-years period 1943–7, for which the median figure was 369. According to the *Weekly Epidemiological Record of the WHO* (Sept. 8), between March 20 (average date of seasonal low incidence) and July 24 of the current year, three States—North Carolina 868, Texas 857, and California 771—had reported 2,496 cases, or approximately 59% of the total of 4,235 for the period. For the corresponding period of 1946 the total was 2,789 and the five-year median 1,653. In 1948 the abnormal increase had been first observed in the early part of May and since that time the cases reported had been, until July 24, consistently about twice as high as the median frequencies for the period. The present epidemic appears to be fairly well localized, but its progressive upward trend is reflected in the subjoined weekly figures of recent incidence, which compare the case incidence in corresponding weeks of 1946 and 1948.

1946: Week ended	Cases	1948: Week ended	Cases
July 6	309	July 3	362
,, 13	427	,, 10	511
,, 20	668	,, 17	717
,, 27	670	,, 24	983
Aug. 3	1,286	,, 31	1,215
,, 10	1,582	Aug. 7	1,239
,, 17	1,819	,, 14	1,411
,, 24	1,808	,, 21	1,307

Discussion of Table

In *England and Wales* a decrease in the number of notifications was reported for measles 354 and whooping-cough 119, and an increase was recorded for scarlet fever 99, diphtheria 31, dysentery 20, paratyphoid fever 21, and typhoid fever 19.

A small rise in the incidence of scarlet fever occurred throughout the country. The chief feature of the returns for diphtheria was an increase of 24 in Lancashire; this was mainly due to a rise of 19 in Liverpool C.B. A fall in the incidence of measles occurred in most areas; the only large exception to the general trend was a rise of 95 in Lancashire. The fluctuations in the local trends of whooping-cough were small; the chief exception was a decline of 83 in the cases notified in Yorkshire West Riding.

An outbreak of typhoid fever affecting 20 persons was notified in Shropshire, Oswestry R.D. This outbreak has been confined to the Orthopaedic Hospital, where it originated (Sept. 18, p. 582), and 51 inmates had been attacked up to Sept. 21. In Staffordshire, Smethwick C.B., 10 cases of paratyphoid fever were notified. The largest returns of dysentery were Lancashire 21, London 12, and Yorkshire West Riding 12.

The incidence of acute poliomyelitis has remained constant during the past four weeks, and the chief centres of infection during the week were Lancashire 8; London 7; Yorkshire West Riding 6 (Sheffield C.B. 3); Gloucestershire 6 (Bristol C.B. 6); Glamorganshire 5; Middlesex 4; and Wiltshire 4.

In *Scotland* increases were recorded in the notifications of whooping-cough 24, scarlet fever 22, measles 16, diphtheria 14, and dysentery 12, while the notifications of typhoid fever were 11 fewer than in the preceding week. The rise in the incidence of diphtheria and dysentery was mainly contributed by the city of Glasgow. The increase in scarlet fever was due to a rise throughout the western area; 29 more cases were notified in this region than in the preceding week.

In *Eire* the largest return for scarlet fever was that of Dublin C.B., where 41 of the 55 cases were notified. An outbreak of measles in Clare, Kilrush R.D., accounted for 20 of the 28 notifications. The largest return for whooping-cough was 14 in Kildare, Athy No. 1 R.D.

In *Northern Ireland* the decline in scarlet fever was due to the experience of the country districts; in the county boroughs an increase of 9 was reported. A decrease of 14 was recorded in the number of notifications of measles from Belfast C.B.

Week Ending September 18

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 925, whooping-cough 2,635, diphtheria 126, measles 2,614, acute pneumonia 283, cerebrospinal fever 26, acute poliomyelitis 72, dysentery 50, paratyphoid 17, and typhoid 28.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Treatment of Chronic Nephritis

Q.—*What is the latest treatment for chronic nephritis (Ellis Type II)? Are there any drugs of real value?*

A.—There is no known curative treatment for Type II nephritis. Prognosis in general is bad, but with a normal blood pressure complete recovery is possible. High-protein low-salt diet is the stand-by in the attack on oedema. Intravenous protein is usually very temporary in effect. Mercurial diuretics are not contraindicated if renal function is good, but are not usually very effective. The body will not retain water without an equivalent retention of sodium. The volume of fluid ingested is therefore relatively unimportant provided that salt is restricted, and a high fluid intake may actually assist in procuring sodium depletion. The high-fluid low-salt regime advocated by Schemm is therefore sometimes very successful in getting rid of oedema. It consists in the administration of 7 pints (4 litres) of water or watery fluid daily by mouth while continuing a diet as nearly salt-free as possible. In favourable cases a large diuresis occurs in a few days and is accompanied by reduction in the oedema. The regime may be continued as long as oedema is present.

The Kempner Rice Diet

Q.—*What is the Kempner rice diet for hypertension? Is it of any value?*

A.—Walter Kempner distinguishes between affections of the metabolic and of the secretory functions of the kidney; in the latter hypertension, retinopathy, and rise of non-protein nitrogen occur. These changes, he postulates, are due to the accumulation in the blood of abnormal substances which in normal circumstances arise only as intermediary products in the metabolism of the kidney cells. These may be reduced by a rigorous diet consisting only of rice, fruit juices, and sugar, supplemented by vitamins and iron. The diet of 2,000 calories consists of 20 g. of protein, 5 g. of fat, 460 g. of carbohydrate, 0.2 g. of sodium, and 0.15 g. of chloride. The fluid intake is usually limited to 700–1,000 ml. of fruit juices daily (no water). The average patient can eat 300 g. of rice daily, which will provide about 1,050 calories. The remaining 900–1,000 calories are obtained from extra sugar or fruit. All fruits are permitted except nuts, dates, avocados, and any dried or canned fruit to which substances other than sugar have been added. No salt is permitted usually, but patients with symptoms of salt deprivation are given extra sodium chloride in small amounts or hydrochloric acid. The patient is also given a minimum of vitamin A 5,000 units, vitamin D 1,000 units, thiamine chloride 5 mg., riboflavin 5 mg., niacinamide 25 mg., calcium pantothenate 2 mg., ferrous sulphate 0.6 g.

Kempner claims remarkable results in chronic renal disease and in hypertension. The blood pressure falls to normal, the heart diminishes in size, the E.C.G. reverts to normal, the blood urea and cholesterol approach normal, and retinal changes regress. He emphasizes that the diet must be adhered to in every detail extremely strictly. This diet is very unpalatable, but his patients have been on it as long as thirty months. He treats cases of all grades of severity; and his results are roughly: death, about 25%; no change, about 25%; improvements to remarkable degrees, 50%. No reports of the effectiveness of the diet have been made in England.

Bronchial Carcinoma and Smoking

Q.—*Is there any relation between smoking and bronchial carcinoma? If so, is cigarette or tobacco smoke, or are both, implicated?*

A.—There is as yet no proof of a causal relation between the incidence of bronchial carcinoma and the habit of smoking. On the other hand, the recorded increase in pulmonary cancer over the past thirty years or so is remarkable in being quite unrelated (in contrast with the incidence of many other forms of cancer) to social status. This suggests that the factors responsible for the increase are environmental in nature and such as would affect every class of the population. Among such factors the concomitant general increase in tobacco consumption, particularly in the form of cigarettes, is undoubtedly one which requires serious attention. What is the order of its importance, if any, and how this compares with the significance to be attached to other factors under suspicion, such as chemical contamination of the atmosphere from tarred road surfaces or from exhaust gases, are still matters for carefully planned survey both in the field and by experiment. Several such investigations have in fact already been inaugurated.

Calcium Iodide for Cataract

Q.—*Is calcium iodide of any value in the control of cataract? What type of base is used, what is the dosage, how is it applied, and over what period should it be used?*

A.—The use of iodides in the form of either sodium, potassium, or calcium salts by various local applications has no sound basis. There is a mass of confused argument which incriminates with equal lack of validity deficiency in either the metal or the iodine. Clinically these substances have been used for many years now in vain attempts to control the development of cataract, and most clinicians regard them as mere placebos.

T.A.B. Inoculation of Infants

Q.—*A patient will be travelling to either Malaya or Hong Kong with her husband and baby in October, when the baby will be about 4–5 months old. Apart from routine vaccination, will the baby require any immunizing injections? The mother will need only T.A.B. (not, as in the war, cholera, plague, and typhus vaccines). Is immunity conveyed by breast milk? If not, could you tell me what injections will be required and what the strength should be?*

A.—Babies who are breast-fed rarely, if ever, require T.A.B. It is probable that immunity is conveyed through breast milk. The question of immunization need not be considered till the baby is at least 18 months old. Children of 18 months have been given two or three doses each of 0.1 ml. with very slight reactions.

Thrombophlebitis and Muscular Effort

Q.—*A patient developed thrombophlebitis of his right internal saphenous vein. While lifting stones at work he felt a sudden pain in his right groin on straightening up, and on examination I found a reddening over the course of the saphenous vein. The vein was cordlike and tender, with some oedema of the leg. He had no history of varicose veins, and complete physical examination revealed no abnormality. As the case involves a claim for compensation, I would like to know if his work was a factor in the production of his condition.*

A.—Phlebitis is not produced by muscular effort, but a blow on the veins, especially if it ruptures the vein, is likely to produce a phlebitis, particularly when a diathesis exists. It is likely that in this case there was a bland pre-existing phlebitis which was brought to the patient's notice by muscular effort. It would be hard to establish a compensation claim in this case.

Light Sensitization Dermatitis

Q.—*What is the best treatment for severe light sensitization dermatitis? I have attempted to obtain special light-repelling face powders without success.*

A.—Treatment in these cases depends almost entirely upon effective protection from light by adequate clothing, including hats, gloves, stockings, etc., and by the use of protective creams on the exposed skin. Where the reaction is entirely urticarial control is often secured by the administration of antihistamines internally. Valuable protective measures are calamine, titanium dioxide, ichthyol, quinine tannate, soft paraffin, and para-aminobenzoic acid. A calamine or titanium foundation lotion with a 2% ichthyol face powder is effective in mild cases; 4% quinine tannate or 15% para-amino-benzoic acid in a base containing equal parts of soft paraffin in Halden's emulsifying base are suggested in more severe cases, or equal parts of "siccolam," Halden's emulsifying base, and soft paraffin. In some cases sensitization is determined by a focus of infection the treatment of which may effect a cure.

Offspring of a Syphilitic Mother

Q.—*What treatment, if any, should be given to a healthy 8-weeks-old baby whose mother's Wassermann reaction is still weakly positive? The mother, aged 26, had a positive W.R. during pregnancy, and was confirmed still positive despite treatment with mercury and bismuth injections. Arsenicals upset her badly, so were stopped. Treatment had started in the fourth month of pregnancy. The child shows no sign of syphilis, and is thriving.*

A.—On the information provided there is no indication for treating the baby. It would be helpful to know what the baby's serum reactions are now, and what stage the syphilis of the mother had reached when she became pregnant or when the treatment was started. The older the syphilis in the mother the less likely is the baby to have been infected: mercury and bismuth would hardly protect the baby from infection if the mother had secondary syphilis. It seems a pity she was not given penicillin. The procedure advised is to test the baby's blood and start treatment only if it is positive to the W.R. and Kahn test and tends to show a persistently high or rising titre over a period of several weeks. Quantitative tests should be employed. Should treatment of the baby be necessary, it should consist of an initial course of penicillin in oil–wax (100,000 units daily for ten days), followed by weekly injections of sulpharsphenamine and bismuth in gradually increasing doses calculated according to body weight.

Radioactive Iodine in Thyrotoxicosis

Q.—*Radioactive iodine is being used in the treatment of thyrotoxicosis. Can you tell me the position of this remedy in the light of experience to date? The patient I have in mind is a man of about 60 with exophthalmos and a B.M.R. which shows a toxicosis "of moderate severity." He has shown some improvement after four weeks' thiouracil medication. The pulse has come down from 90 to 78, and he has been ambulant throughout.*

A.—Radioactive isotopes of iodine have recently been used in the treatment of thyrotoxicosis; those chiefly employed have been I^{130} (half-life 12 hours) and I^{131} (half-life 8 days). Good results are claimed, and "cure" is said to follow one oral dose in 90% of patients. It is fair to say that the method has not yet emerged from the experimental stage, and, in this country at any rate, radio-iodine is not generally available. The practical disadvantage at present seems to be that the half-life of the isotopes is so short that they must be administered within four hours of production. In the particular example cited thiouracil has scarcely been given a fair trial, but even in this short time improvement seems to have been considerable.

Head Colds in a Child

Q.—*Would it be permissible to attempt to reduce the incidence of severe head colds in a child, aged 5, in whom no pathological cause can be found in the ears, nose, or throat, by giving small daily doses of sulphadiazine throughout the winter?*

A.—The most likely aetiological agent of the common cold is a virus, consequently the use of sulphadiazine would not be justified as a prophylactic measure. There would seem to be three possible causes for the trouble: first, there may be a chronic carrier (i.e., old sinus trouble) in the family. Recurrent upper-respiratory-tract infection in children is sometimes cured by taking out father's tonsils! Secondly, the child may have some pathological condition which has been missed, such as antral infection. Thirdly, associated with both of these, immunity may be low and might be stimulated by the use of a suitable vaccine and by general measures such as a full vitamin dosage, fresh air, and attempts to harden the child. The possibility of an allergic rhinitis should not be overlooked.

"Dynamite Headache"

Q.—*What is the pathology and treatment of "dynamite headache"?*

A.—Dynamite, largely used for blasting purposes in mines, is a mixture of nitroglycerin and the infusorial earth kieselguhr. Physiologically, the action of nitroglycerin is that of a nitrite, and it acts directly on the arterial muscle, producing a prompt fall in blood pressure. Given medicinally in therapeutic doses, within two minutes it accelerates the pulse, dilates the arteries, and produces a feeling of fullness all over the body, but particularly in the head. Headache may be caused lasting from 15 minutes to several hours, according to the quantity taken, but in patients accustomed to its use this effect may not be felt. In the manufacture of cordite some workers may experience headache due to nitroglycerin, and such effect is influenced both by the conditions of work and by the amount and duration of previous exposure—workers tending to become temporarily acclimatized. The treatment of headache from nitroglycerin and allied compounds is first to remove the sufferer to fresh air. If the headache continues, caffeine citrate, 2 gr. (0.13 g.), can be given. An alternative treatment is with aspirin, 5 gr. (0.32 g.), followed by ephedrine ¼ gr. (16 mg.). Chronic poisoning has resulted from the taking of ephedrine over a period, and this drug should only be given under medical supervision. Nitroglycerin acts more quickly on an empty stomach, so it seems advisable that workers exposed should partake of breakfast first.

NOTES AND COMMENTS

Colour Photographs.—Dr. PHILIP ROSS has asked us to state that the colour films which were used to illustrate his article on "Skin Lesions due to Pitch and Tar" (Aug. 21, p. 369) were the work of Mr. H. H. Tait, to whom he is indebted.

Delivery after Operation for Prolapse.—Mr. R. M. CORRY (Preston) writes: In "Any Questions?" (Sept. 18, p. 583) the problem of vaginal delivery following an operation for prolapse was considered. In the answer one complication has been overlooked—namely, traumatic post-partum haemorrhage. There is a small but definite chance of this occurring in any patient who has previously had an operation on the cervix. I have met this complication on two occasions, and therefore I am of the opinion that such patients should not have the first confinement after operation at home.

Dangers of Cinchophen.—Dr. EWAN F. B. CADMAN (Liverpool) writes: I would like to comment on the recent replies given in connexion with the questions on the dangers of cinchophen ("Any Questions?" Aug. 28, p. 450, and Sept. 18, p. 584). It is felt they are somewhat misleading. First, it is agreed that cinchophen is probably the most effective substance in increasing the excretion of uric acid, but acetylsalicylic acid gives precisely the same beneficial results clinically and biochemically without the fear of serious complications (Bauer, W., and Klemperer, F., *New Engl. J. Med.*, 1944, **231**, 681). Toxicity of cinchophen is unrelated to dosage or previous medication, and once the symptoms have appeared, in the case of liver damage, poisoning progresses despite the discontinuance of medication. The incidence of serious toxic reactions is admittedly low, but up to 1936 as many as 191 cases of liver damage had been reported, with a mortality rate of 47% (Palmer, W. L., and Woodall, P. S., *J. Amer. med. Ass.*, 1936, **107**, 760). Other serious though not fatal complications are peptic ulcer, haematuria, and granulopenia—all rare.

Probably the most important part of the question was not answered—"Can you suggest any safer alternative?" If cinchophen were an indispensable drug like morphine, then there is little doubt that it should be used in spite of its occasional toxic effects. The complications of untreated gout may lead to an untimely death. However, there are excellent alternatives in the form of large doses of aspirin in chronic gout and colchicine in acute gout. Therefore, on general therapeutic principles alone, I feel very strongly that cinchophen should not be used in gout, or in any other condition, unless there is some very good reason for its use.

Correction.—Messrs. Henry Kimpton inform us that they are the English agents for the book *Practice of Allergy*, by W. T. Vaughan and J. H. Black ("Books Received," Sept. 25, p. 604), and that the price is 75s.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone. Authors desiring REPRINTS should communicate with the Publishing Manager, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs.
ADVERTISEMENTS should be addressed to the Advertisement Manager, B.M.A. House, Tavistock Square, London, W.C.1 (hours 9 a.m. to 5 p.m.). TELEPHONE: EUSTON 2111. TELEGRAMS: *Britmedads, Westcent, London.*
MEMBERS' SUBSCRIPTIONS should be sent to the SECRETARY of the Association. EUSTON 2111. TELEGRAMS: *Medisecra, Westcent, London.*
B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.